TechLift
KICKSTART YOUR CAREER

Impact Assessment Report

Amended Version with Employment Update

Prepared by P@SHA L&D Wing,
in support of JV Led by **Contour Software**

Submitted to PSEB

PAKISTAN PSEB SOFTWARE EXPORT BOARD

TECH destiNATION PAKISTAN

PARTICIPATING COMPANIES

JOINT VENTURE LEAD

CONTOUR Software

JV Members

exd EXCELLENCE DELIVERED

FRAG FOR ROCK AND GAMES

NorthBay

care Center for Advanced Research in Engineering

TERESOL Technological Research Solutions

SYNERGY-IT

SOFTOO

CureMD

Devspot (Pvt) Ltd.

codeninja

datics

bitSol Technologies

OneScreen

SMART IS PAKISTAN

EMERALD LABS

Supported by

IT Solutions ArhamSoft (Pvt) Ltd.

systems

QC360 Be Compliant

TPS

LUMINOGICS

Facilitated By

Ministry of Information Technology and Telecommunication
DIGITAL PAKISTAN

PAKISTAN PSEB SOFTWARE EXPORT BOARD

TECH destiNATION PAKISTAN

P@SHA PAKISTAN IT INDUSTRY ASSOCIATION

Message from Minister of State (IT & Telecom)

Ms. Shaza Fatima Khawaja

Minister of State - MoITT

As Minister of Information Technology and Telecommunication, I'm thrilled to celebrate the achievements of the TechLift program. I am delighted that this program is helping fulfill Honorable Prime Minister's vision of digital nation Pakistan. In a rapidly growing IT sector, equipping our graduates with the right skills is crucial for both individual success and national progress. TechLift delivered on this promise by training 4,000 unemployed graduates. This public-private partnership paved the way for a more inclusive and future-proof IT workforce.

As we watch Pakistan's IT sector rise to new heights, we do so while recognizing that it could not have done so without the committed and collaborative efforts of the public sector, the industry, and the young, energetic minds that populate its workforce today. And yet, our success relies on not letting the skills development of our youth stagnate. By improving their employment opportunities and shifting the tide to increase women's participation, the MoITT remains committed to enabling our workforce of tomorrow to adapt and grow with the ever-changing spectrum of the global technological arena. With 17.3% of graduates under Techlift's banner being women, we hope to continue fostering a culture of integration and women's empowerment within the IT sector of Pakistan.

The program's success is a testament to the collaboration between public and private sector. Together, we've established a model for future skills development initiatives. To achieve the best possible outcomes, the government and the industry must and will continue to work side by side, towards the common goal of youth empowerment.

But the true heroes are the graduates themselves. Their dedication and hard work have propelled them into promising careers, setting an example for future generations.

I would also like to congratulate PSEB, P@SHA, and Contour, as well as the stakeholders and JV members for their remarkable work and this historic industry-led initiative.

This journey is just the beginning. The insights gained from TechLift will guide us as we continue to empower Pakistan's IT workforce and shape a brighter technological future.

Ms. Shaza Fatima Khawaja
Minister of State - MoITT

Message From Secretary IT

CAPT. (RETD.) MUHAMMAD MAHMOOD

Secretary IT

In a time of rapid technological advancement, both nationally in Pakistan and internationally within the global IT ecosystem, it has become essential to foster growth and development via unique initiatives that are up for the challenge. In lieu of that, it has been a pleasure to facilitate TechLift as a beacon of progress for the IT sector of Pakistan as it strives to carve a path to a better tomorrow.

It has been remarkable to witness the ever-growing heights that Pakistan's IT sector has been able to achieve. However, like most areas of youth-led development, sustainability becomes crucial to maintaining course. With Techlift facilitating a first-of-its-kind public-private partnership that brought together P@SHA, the Ministry of Information Technology and Telecommunication, the Pakistan Software Export Board, and 16 leading software and Tech companies, it enabled the advent of a new era, one focused on collaboration and advancement. In doing so, it not only enabled the youth of Pakistan to adapt to the ever-changing landscape of the information technology sector, through training 4,000 students in 8 most in-demand technologies, but also paved the path for better integration of women into the workforce.

I would like to commend our JV members and stakeholders for their untiring efforts and commitment. We remain committed to our stance that the industry and the government will continue to empower the workforce of tomorrow, together. Techlift has proven itself to be exemplary in regards to its insights and data. If Pakistan can expect more initiatives like Techlift on its horizon, particularly ones uniquely positioned at the nexus of data-driven public-private partnerships, the youth of tomorrow remains in excellent hands.

CAPT. (RETD.) MUHAMMAD MAHMOOD
Secretary IT

Message on Behalf of JV from

Syed Bilal Mahmood

MD Contour Software - JV Lead

Given the IT industry's concerns about the limited supply of industry-ready graduates, as well as concerns about past vocational training expenditures having borne limited fruit, it has been an honour and a privilege for Contour Software to act as JV Lead for the first time that:

- Our industry has participated collaboratively to such an extent, and,
- Driven the solving of our common Skills supply problem ourselves, through action.

I have also, personally, had the honour of being part of P@SHA's Skills Development Committee for the past 3 years, and have thus participated in and seen the contributions of various stakeholders towards the design of the project. From the early stages, involving Shamim Rajani, Ali Ihsan, Salman Dar, Bilal Hashmat & Dr. Shoab Khan with me on the P@SHA Skills Committee bringing in the voice of the industry, and the initial crafting, funding and policy support provided by Member IT Junaid Imam, former MD PSEB Osman Nasir, CIDO Raza Sukhera and other members of PSEB and MoIT, to the support provided by past and current P@SHA Chairpersons Badar Khushnood & Zohaib Khan, present & past Secretary Generals Nadeem Aslam Malik & Hira Zainab, Maliha J Khan & Aleem Abbas from the P@SHA Secretariat, and to the most unflinching support provided by former Honourable Minister IT & Telecom Mr. Amin ul Haque. Thus, even before execution, the problem definition was already a great example of government and industry collaborating for a lofty goal.

When it came to the execution of this project, a similarly collaborative approach was undertaken, whereby P@SHA facilitated the industry in gathering software companies willing to collaborate as a consortium. As we progressed towards the execution, a comprehensive engagement ensued, in order to select groups of JV member companies to focus on specific technology streams to refine, and then to manage the curriculum refinement process, select the best ATS, LMS, and other learning tools required, and even bring in expert services to provide Train the Trainer and curriculum formalization support.

Given changes in government, fiscal year rollover, as well as changes in personnel across the customer agency PSEB, the industry trade body P@SHA and at the 16 JV member companies and services providers over the course of time spanning from since before the project was floated at the start of 2022 - for us to have completed and delivered this first-of-its-kind project in Pakistan, 18 months later, and with the sort of success stories witnessed, it is both immensely humbling and a matter of pride that we have been able to deliver on a project that has the potential to achieve material economic benefits for the industry and entire country.

At the start of 2023, it became a source of motivation to hear Federal policy makers (PM Office and related) as well as Provincial IT Boards start to look towards the outcomes and lessons learnt from our TechLift Bootcamp program, for use as the pilot blueprint for expansion of delivery to people in much greater numbers, and in cities and regions beyond Karachi, Lahore & Islamabad.

I would like to especially thank all the other 15 JV Members, whose coming together not only allowed us to secure the honour of delivering this project, but crucially enabled us to work together patiently and steadfastly, to deliver something we can be truly proud of, and can hopefully influence policy makers to replicate and expand for future years as a matter of course.

Sincerely,

Syed Bilal Mahmood
Lead Partner - JV Led by Contour Software
Managing Director - Contour Software (PVT) LTD, a subsidiary of Constellation Software Inc.

Message on Behalf of P@SHA from

Muhammad Zohaib Khan

Chairman, P@SHA

I am thrilled to present to you the Techlift Impact Analysis Report 2024, a comprehensive evaluation of the Techlift program to illuminate the impact of the program on the IT & ITeS Industry across Pakistan.

At P@SHA, our unwavering commitment to bridging the skills gap in Pakistan's workforce remains paramount. This report provides an exclusive analysis of the program and how it affected the demand and necessity for skilled IT professionals within Pakistan's IT industry, aiming to unearth new employment opportunities and drive positive change. We firmly believe that this report will play a pivotal role in evaluating the success of Techlift, guiding the industry's strategic decisions, resource planning, and talent development initiatives. It stands as a testament to P@SHA's steadfast dedication to advancing the IT sector in Pakistan.

We deeply appreciate your continued support and, I wish to express my heartfelt appreciation to stakeholders, members, and partners for their steadfast support. Together, we are shaping a future marked by empowered individuals and unmatched excellence.

Muhammad Zohaib Khan
Chairman, P@SHA

TABLE OF CONTENTS:

1 Introduction

Introduction to Techlift Program and the Impact Assessment Report

Introduction

Need Analysis

Techlift Program is the first of its kind industry led program that addresses the biggest concern of the IT industry, the shortage of Technical Human Resources.

Out of the 25,000 individuals who complete their technology-related studies annually, a mere 10% are deemed 'employable' by the IT and ITeS sector (Gallup Survey). In other words, they possess the necessary technical skills, effective communication abilities, professional demeanor, and the mindset that employers seek. The majority of graduates who are unable to secure employment originate from Tier 2 and Tier 3 universities. Additionally, even among those who are hired, employers reveal that it typically takes 3-6 months to train and enhance the proficiency of new talent in relevant technologies, enabling them to contribute as productive team members.

$2.6 Billion USD

Export Revenue in 2022

Despite the technology industry surpassing $2.6 billion USD in export revenue in 2022 and displaying an impressive annual growth rate of 24 percent, all sub-sectors within the industry are confronted with an impending scarcity of skilled professionals over the next five years. This shortage is expected to impact their ability to sustain such rapid expansion. As per the policy papers presented by P@SHA to the government, if the industry is to reach the annual export of USD 15 Billion by the year 2028, 650,000 technical resources will need to be hired.

20%

Growth Rate

As per the P@SHA IT Skill Requirement survey 2022, it is evident that well over 20,000 positions will be open for hiring in the next year. The skills required for these positions are also not currently trained at the universities. With the overall struggles faced by the industry in the economic crisis the IT industry will further suffer if the skills gap is not resolved in the coming years.

Why Techlift

As a short term or a medium term solution for the shortage of resources, Techlift Program was designed so that the industry's requirements can be addressed by industry led interventions.

Bridging the Academia-Industry Divide

Gallup Declares Only 10% IT Graduate Can Get Employment In Pakistan

TechLift is intended to be the first program of these Industry led trainings where the industry professionals:

- Design the curriculum for the most in demand courses (per P@SHA industry survey).
- Lead the training through bootcamps driven by hands-on practitioners currently involved in enterprise-level/export-grade work.
- Can monitor progress of students, and hire/consume graduates as they become industry-ready.

The program targeted to train 4000 graduates to be placed into the industry directly after the bootcamps. The primary objectives of this program are stated below:

PO1 **POLICY:**
To develop and validate a working model/framework for training of IT resources at a national level to bridge the gaps **1›** between supply and demand, and **2›** between industry need and academia delivery.

PO2 **JOB CREATION:**
To make the unemployed/underemployed IT/Engineering graduates ready for integration into the industry.

PO3 **INDUSTRY:**
Capacity building of IT companies for training their HR for better employment and productivity.

2 Program Design

Brief about the design of Techlift

Program Design

Techlift is an industry-driven training program that represents a significant milestone in collaboration within the tech sector, striving to accomplish a strategic objective. The program was entrusted to a joint venture consisting of 16 IT export companies, which received guidence from 5 additional P@SHA member companies. This consortium took charge of leading the program, while P@SHA played a crucial role as a strategic partner, providing facilitation and support.

According to the program's specifications, the goal was to train a total of 4,000 trainees in five primary technical courses, consisting of eight subtracks in total. The training sessions were intended to be conducted in-person, accommodating a maximum of 50 students per cohort. These training sessions would be facilitated by an industry expert serving as the lead trainer, with additional support from lab assistants and soft skills trainers. The programs were run for both unemployed and underemployed graduates, (graduated 2017 and later), physically in Karachi, Lahore and Islamabad (but open for all citizens of Pakistan with HEC recognized degrees completed 2017 or later). To make it accessible for all the program had two general schedules: Weekend and Weekday model.

Program Aspect	Weekday Model	Weekend Model
Total Hours	**300**	**300**
Ideal for	**Fresh graduates/students**	**Working individuals**
Hours/Day	6	8
Days/Week	5(Mon - Fri)	3(Fri - Sun)
Hours/Week	30	24
Program Duration	10 weeks	13 weekends
Months	2.5	3.1

**Increased focus on take-home assignments and mid-week feedback cycles.*

3 Development of Curriculum

About the Curriculum and its Development Process

Development of Curriculum

One of the key aspects of TechLift was the curriculum and its development. Conducting the industry led bootcamps meant that the development of curriculum itself had to be done through a collaboration of the industry. With P@SHA as the strategic partner the 21 JV and Consortium companies came together to design curriculum and gave their inputs at all stages of development.

Curriculum Variants

As required by PSEB in the RFP that was rolled out, the program had a total of 5 main tracks which included the following:

1. MEAN/MERN Stack
2. Web Engineering
3. Cloud Solution Architecture
4. Software Quality Assurance
5. Mobile App Development

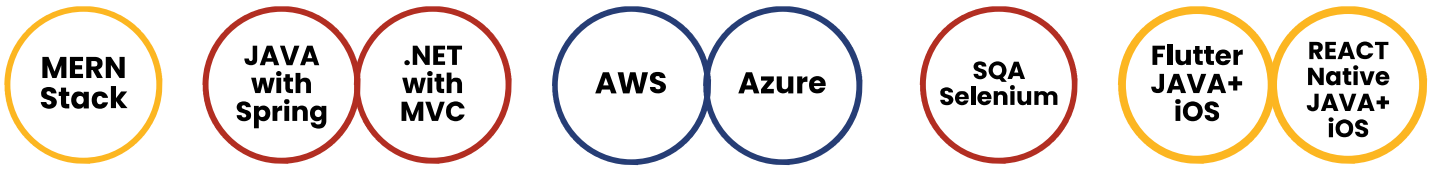
Based on the input and feedback from the industry, the final subtracks were selected for Techlift and this created a total of 8 variants of the overall curriculum based on tracks.

- MERN Stack Development
- Web Engineering .NET
- Web Engineering JAVA
- Cloud Solution Architecture AWS
- Cloud Solution Architecture Azure
- Software Quality Assurance
- Mobile Application Development Flutter
- Mobile Application Development Native

Curriculum Development Subtracks

05 Tracks

08 SubTracks



Another variation in the curriculum design was brought by both P@SHA and the industry experts to include Programming Fundamentals before teaching the main specialized tracks so the trainees who are coming from both CS and non CS background can be brought up to speed to start the main course. Programming Fundamentals has three variants based on the language that they use. This was created based on the relevance and focus of the programming fundamentals language to the main track.

In addition to the Programming fundamentals taught before starting the main track, P@SHA recommended a standardized Soft Skills curriculum based on the insights from the industry that many of the graduates do not get jobs due to their shortcomings in this area. The soft Skills curriculum is standardized for all tracks and subtracks.

The final variation in the delivery schedule is based on the type of program that the companies chose to go with. The program had mainly two implementation designs *(with some adjustments made based on Covid, Ramadan and other schedule disruptions).*

Weekend:

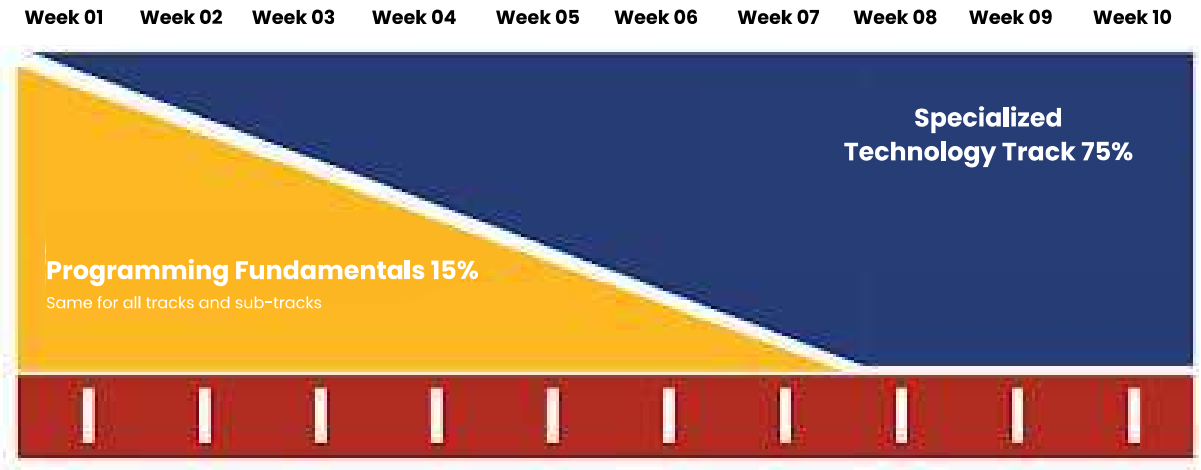
Friday to Sunday, 3 days and 8 hour of learning time per day

Weekday:

Monday to Friday, 5 days and 6 hours of learning time per day

Curriculum Design:

The curriculum for the program was divided into three portions.



4 Introduction: Impact Analysis

About the impact analysis: why it is needed, what is being measured and how it is being measured

Introduction: Impact Analysis

Techlift is an unprecedented program that aims to implement a skilling project by bringing together various industries. Its impact is expected to manifest in the form of making students an integral part of the industry and demonstrating how effectively Techlift can meet this objective. However, it is also worth highlighting the anticipated major achievements and impact of this program, which may include the mobilization of industrial practitioners, capacity building of industry trainers, creating awareness of industry knowledge and perspective, and providing free-of-cost access to training opportunities for the general population. These outcomes are expected to contribute significantly to the success of Techlift and its goal of bridging the gap between academia and industry.

Introduction to **Techlift Impact Assessment**

- Program Reach
- Target Population
- Demand Dynamics
- Educational Background
- Trainer Profiles

ATS

- **Enrolled Demographics**
- **Geographical Footprint**
- **Trainee Profiles**
- **Track specific demand**

LMS

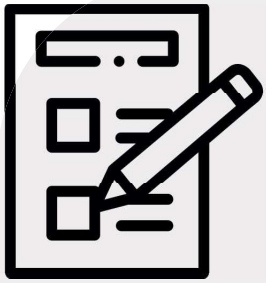
Surveys

Students

Trainers

Manager

Leader



Training Feedback

Curriculum Feedback

Trainer Feedback

Participation and Demand

IMPACT

Industry Intake

Methodology:

This report aims to provide a comprehensive analysis of various data points to evaluate the effectiveness of the program, identify areas for improvement, and address potential challenges associated with scaling up the program in the near future.

To gather the necessary insights, data was collected from three primary sources, namely:

- **Application Tracking System (ATS):**

  The ATS dataset encompasses information on all registered candidates, regardless of whether they ultimately enrolled in the program. This dataset provides an overall understanding of how the target audience received the program and helps us gauge the demand for it. By analyzing this data, we can gain valuable insights into the program's initial reception.

- **Learning Management System (LMS):**

  The LMS dataset contains a more refined and detailed set of data specifically focused on students who successfully enrolled in the TechLift program after undergoing standard due diligence procedures. This dataset allows for a deeper analysis of student performance, engagement, and progress within the program.

- **Surveys:**

  Surveys were conducted to gather insights from various stakeholders involved in the program, including students, trainers, project managers, and participating companies. These survey responses offer unique perspectives that are instrumental in understanding areas of improvement and shaping future iterations of the bootcamp model.

By utilizing these three diverse datasets, a comprehensive assessment of the program's efficacy can be conducted. This analysis will provide valuable insights into the program's impact on students, highlight successful components, pinpoint areas for enhancement, and identify challenges that may arise during the program's scaling process.

Through a thorough evaluation of these data points, we can better understand the program's effectiveness, refine its implementation, and ensure a successful and scalable future for the TechLift program.

5 Insights: All Registered Students

This section looks at overall registrations of graduates under Techlift program on ATS Platform.

Insights

Registered Students on ATS

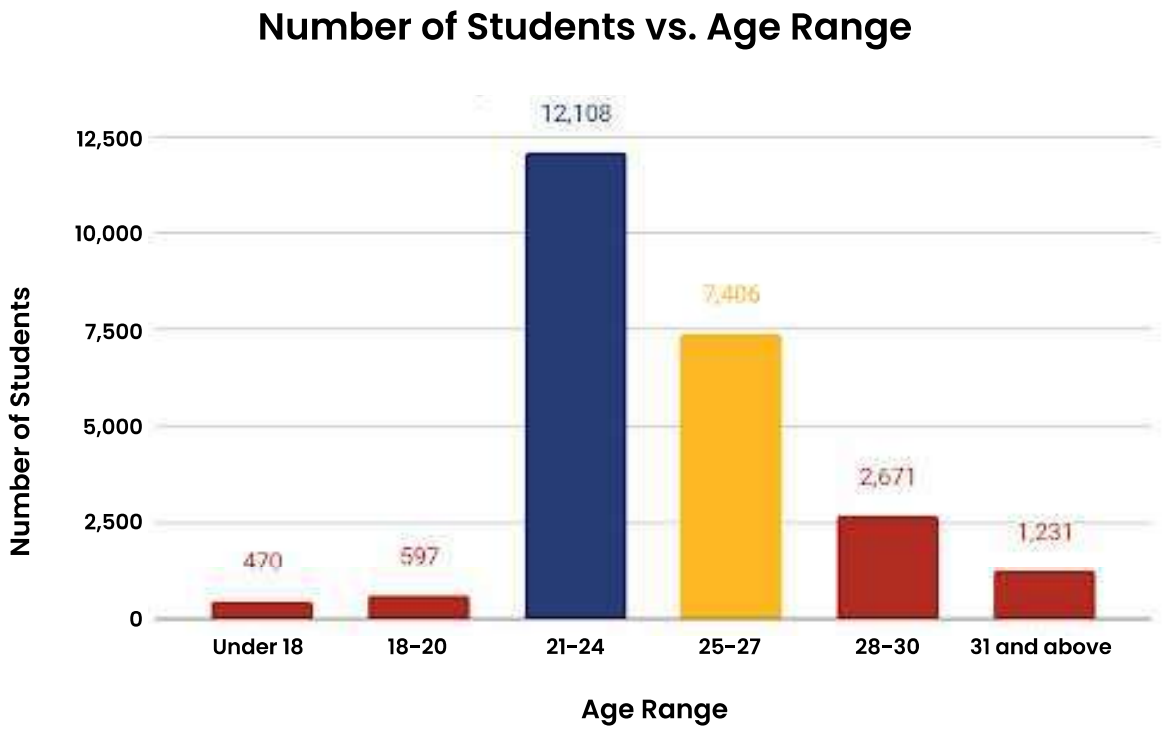
24,483 candidates registered for the program using the online application tracking system (ATS) portal. After registration students were provided with a link to take an entrance exam. as per the criteria the students with 50% or more marks in a maximum of two attempts would qualify for the program.

50%
Minimum Criteria

Here are some of the key data points of the registered students.

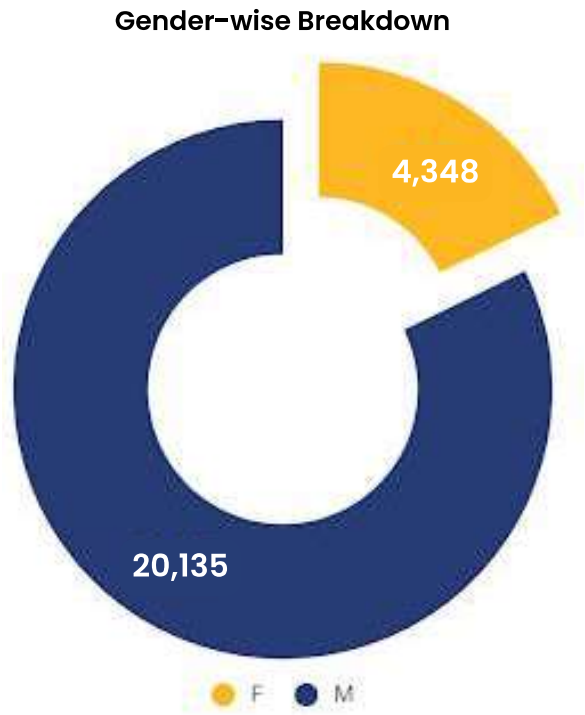
Demographics

Age



The data suggests that the majority of individuals interested in the IT training program are in their early to mid-twenties, with relatively fewer registrations from older age groups. This is consistent with the program's eligibility criteria that limits the target audience to be from a certain age group that graduated after 2017. The data also highlights the need to consider targeted marketing strategies to attract a broader range of age groups and potentially tap into untapped markets such as the older demographic or younger individuals interested in IT.

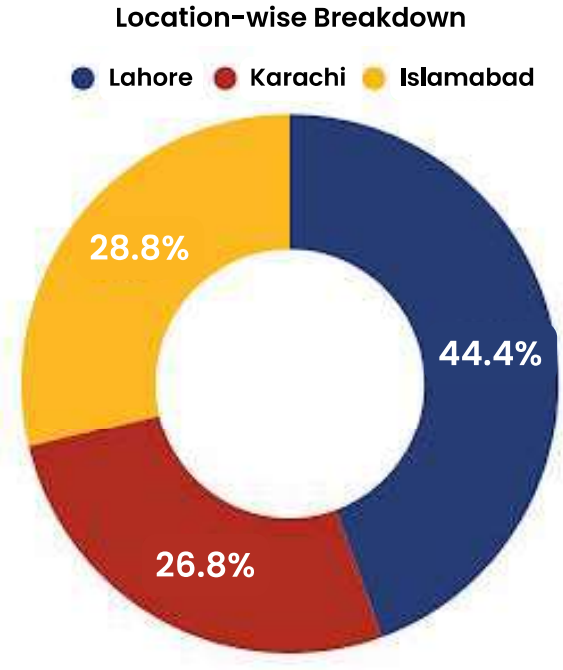
Gender



The graph paints the picture of the dilemma that most of the industry is facing. It is evident in this program as well. The gender balance and female involvement in the IT industry is an overall challenge in Pakistan.

Another interesting dynamic to emphasise here is the fact that this program was delivered offline in select cities, while the interest from female students was there from outside of Karachi-Lahore-Islamabad, but generally they could not move from their hometowns or attend the classes in another city. The hybrid structure of the program, or delivery in Tier2 cities, would solve this problem and create a better balance of genders.

Location



The higher number of registrations in Lahore could be attributed to various factors such as a larger population, availability of IT training institutes, higher concentration of educational institutions, or stronger industry presence. Meanwhile, Karachi and Islamabad, being major cities themselves, also show substantial interest but with slightly fewer registrations. A key factor that cannot be ignored is that 7 of the 16 (43.75%) JV Partner companies delivering the project were Lahore-headquartered companies, thus also impacting the pull.

These insights highlight the varying levels of interest and demand for IT training among graduates in different cities of Pakistan. It indicates that Lahore has a comparatively higher demand, while Karachi and Islamabad also exhibit significant interest. This data can help in understanding the regional distribution of demand and can assist in planning and allocating resources for IT training programs in these cities. While the involvement percentage of P@SHA member companies that became part of the JV (7 Lahore, 6 Islamabad, 1 Karachi-headquartered) can be reflective of the intensity of demand-supply imbalance felt, anecdotal evidence also points to the comparatively lesser quantity of Tier1 university output from Lahore, in comparison to the number of IT companies located (and thus requiring skilled resources) in Lahore.

7 Lahore Headquartered

6 Islamabad Headquartered

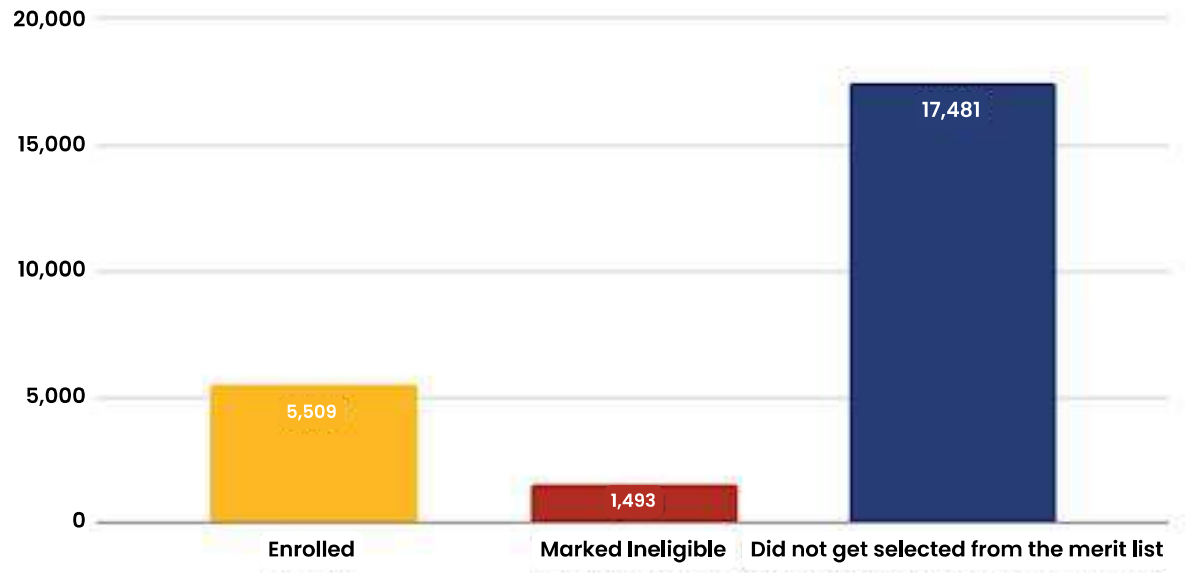
1 Karachi Headquartered

Academic Background

Eligibility

Enrollment Status

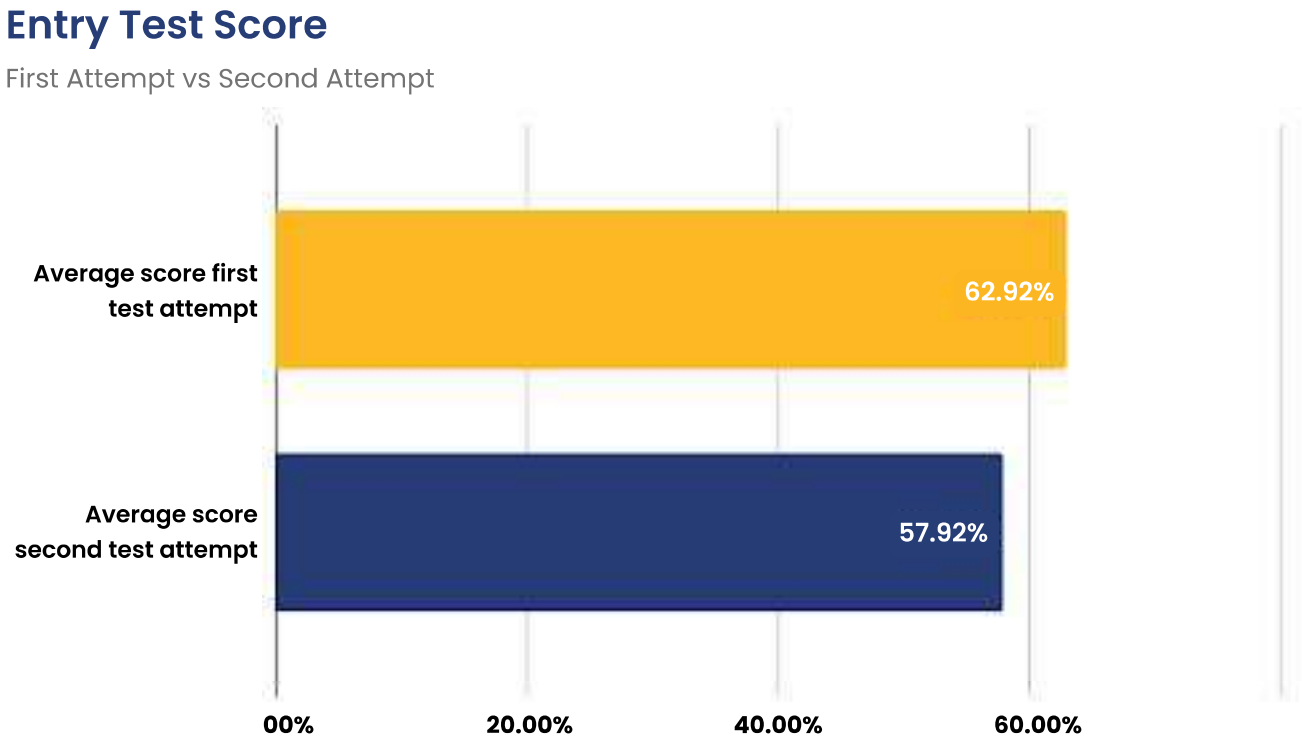
Enrolled vs. Ineligible vs. Not-Qualified



This is an interesting data point especially when it comes to highlighting the need for future programs. The chart shows 17,481 students who could not qualify for the bootcamps given the limited number (4000) seats. These students did not score high enough to be placed high in the merit lists given the tough competition. This number will definitely spill over into the next iterations of the program.

The entry test was designed to ensure it was neither too restrictive nor too easy, as well as ensuring it allowed for those without technical/computer programming education to also be able to pass based on analytical skills demonstrable via the test.

Test Score Comparison

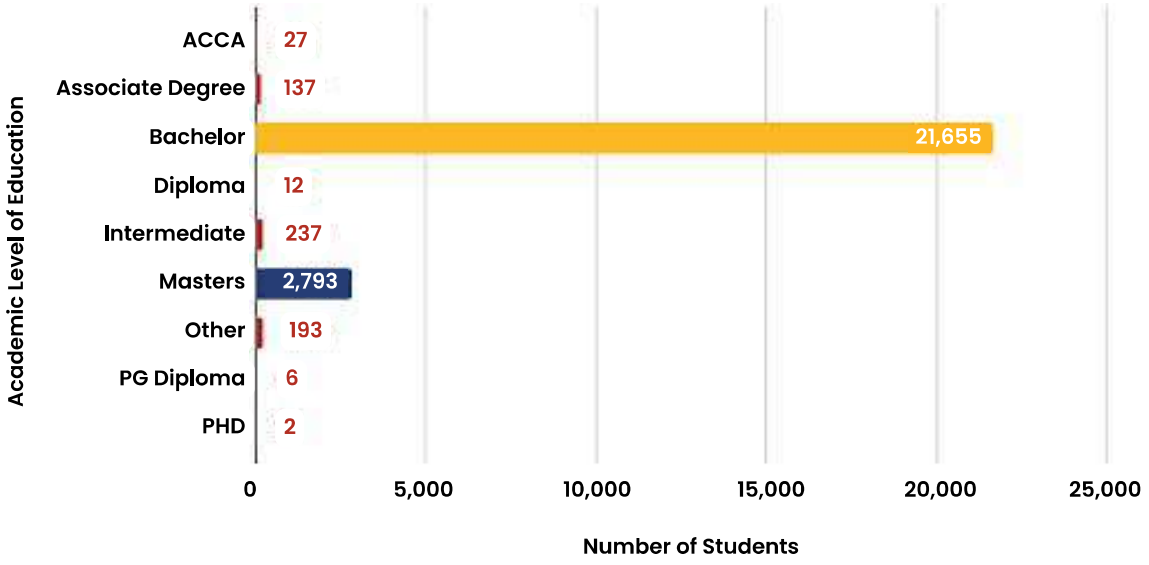


The average score on the second attempt was just above the passing marks of 50%.. Understandable that these are the students who had failed on the first attempt and improved slightly in the second attempt to qualify for the program.

Academic Profiles

Academic Background

Level of Education

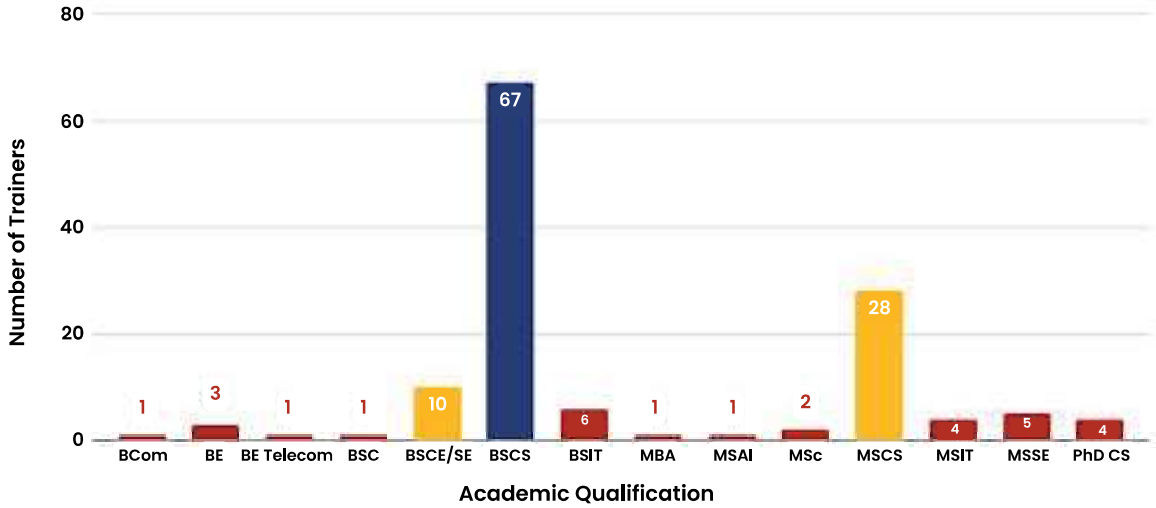


In line with the program requirements the highest interest came from students who had completed bachelor degrees. This was a prime requirement of the program. Students with Masters and PhD degrees also expressed interest in availing the training. Only a small percentage of those with less than 16 years of education applied knowing that they did not have the prerequisite education required to enroll for the program.

Trainer Profiles

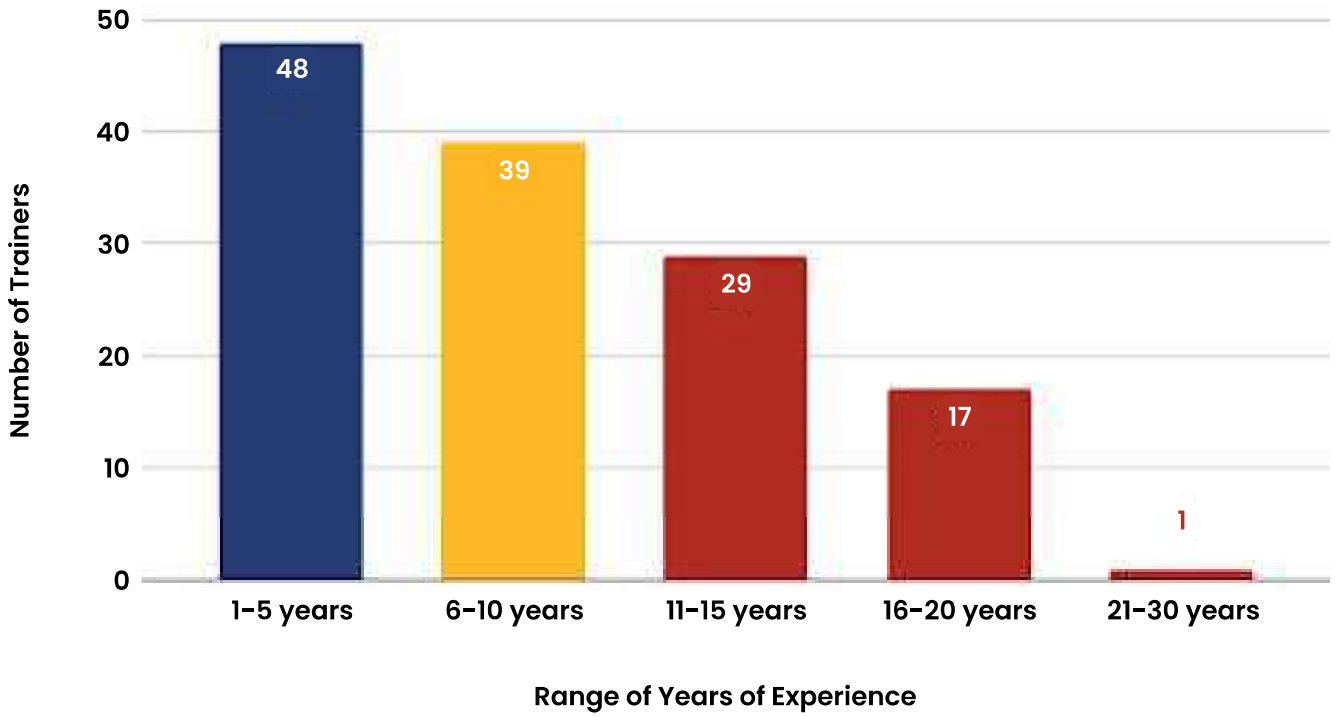
Trainers' Academic Background

Number of Trainers vs. Academic Qualification



Among the 134 active trainers, 67 of them hold a BSCS degree. Since these trainers are focused on practical rather than academic training, it is logical to have a higher proportion of individuals with bachelor's degrees and industry experience. Additionally, 28 trainers possess an MSCS degree, while a few others have earned PhD and MS degrees. Furthermore, there are trainers with backgrounds in engineering, as well as a small number with degrees in business studies.

Number of Trainers vs. Range of Years of Experience



The above graph further illustrates the years of experience of the trainers with many trainers falling within the ranges above 6 years. The industry experience makes the Trainers more relevant for this program promising a less academic and more practical approach to the bootcamps execution.

6

Insights: All Enrolled Students

This section looks at the enrolled graduates under Techlift program on LMS Platform.

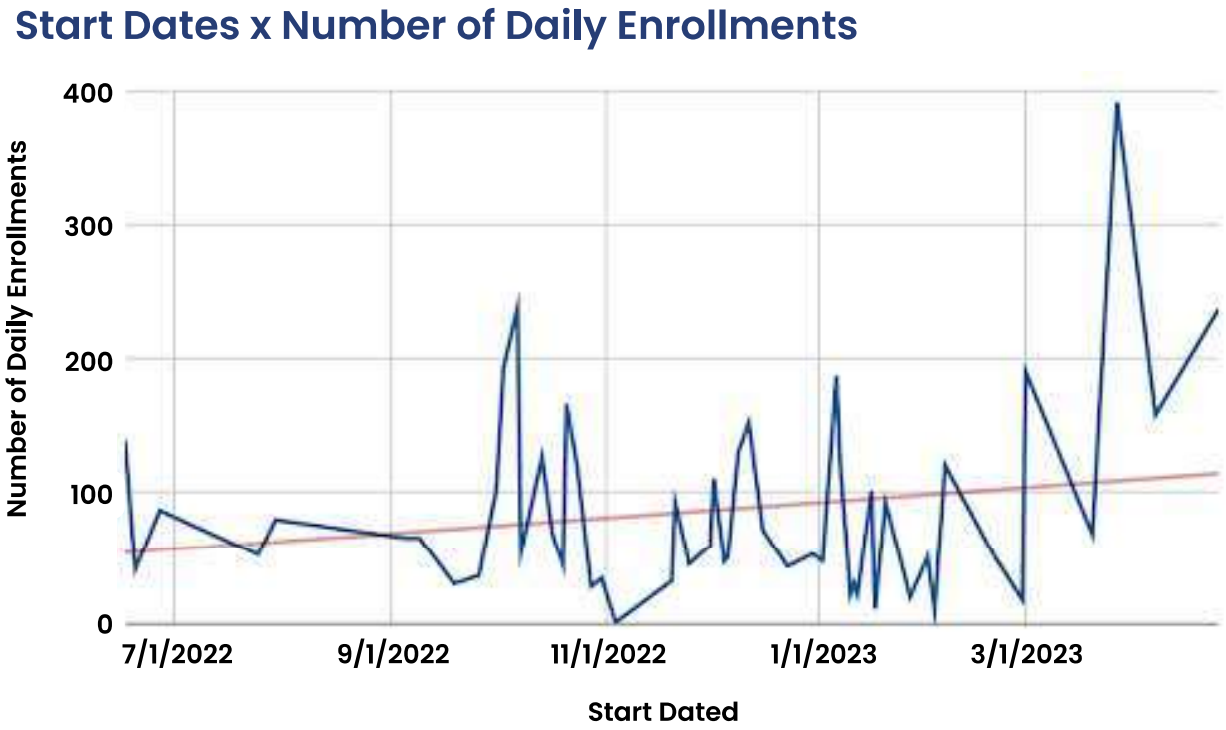
LMS and Placement Data

This section will analyze and look at the data points of 4000 students enrolled and graduating from the program based on the registrations made on LMS. This different data and statistics will help in understanding the profiles of trainees that were a part of this program.

4000

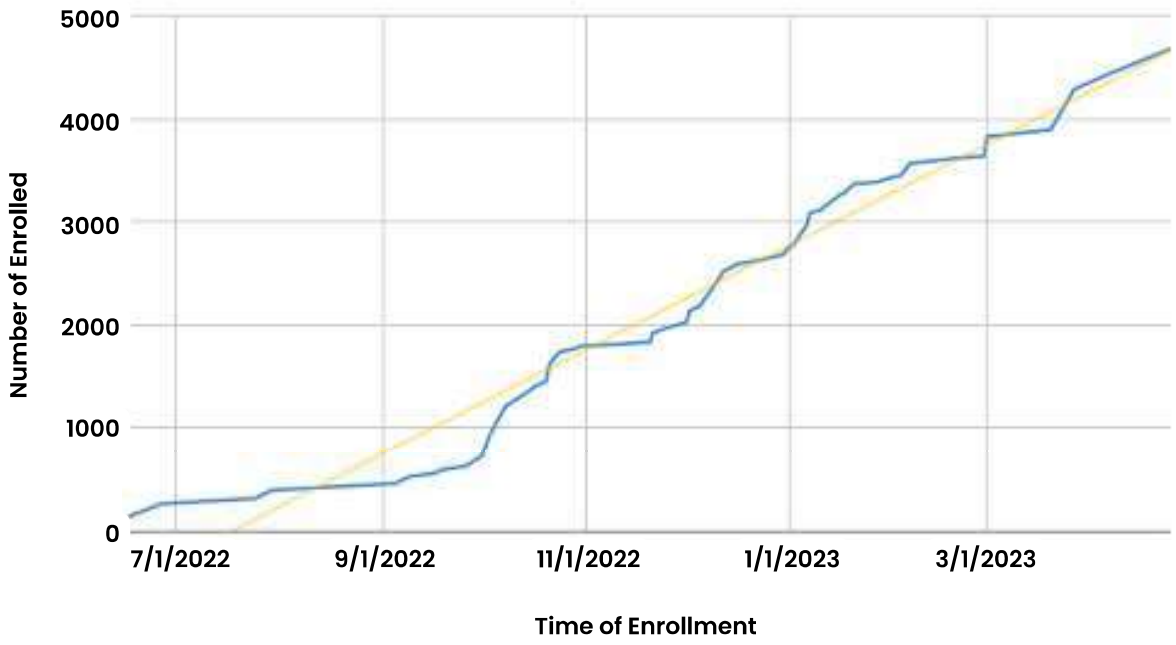
Students Enrolled

Enrollment Timelines



Undertaking a pioneering endeavor in any field comes with its fair share of challenges. Techlift faced numerous hurdles, including delays caused by legal processes, approvals, and funding constraints. These obstacles inevitably impacted program's marketing efforts. However, as we review the timeline, it becomes evident that despite initial low registration numbers due to limited marketing activities, the program gradually gained momentum. Once it received government approval and all contractual matters were resolved, we witnessed a remarkable surge in interest from candidates, leading to a significant increase in enrollments. With the fiscal year deadline fast approaching, we observed yet another surge in enrollments as partners raced against time to complete the boot camps within the project's timeframe.

Number of Enrolled vs. Time of Enrollment



A similar trend can be seen in the curve towards meeting the target with a gradual rise towards late 2022 and early 2023.

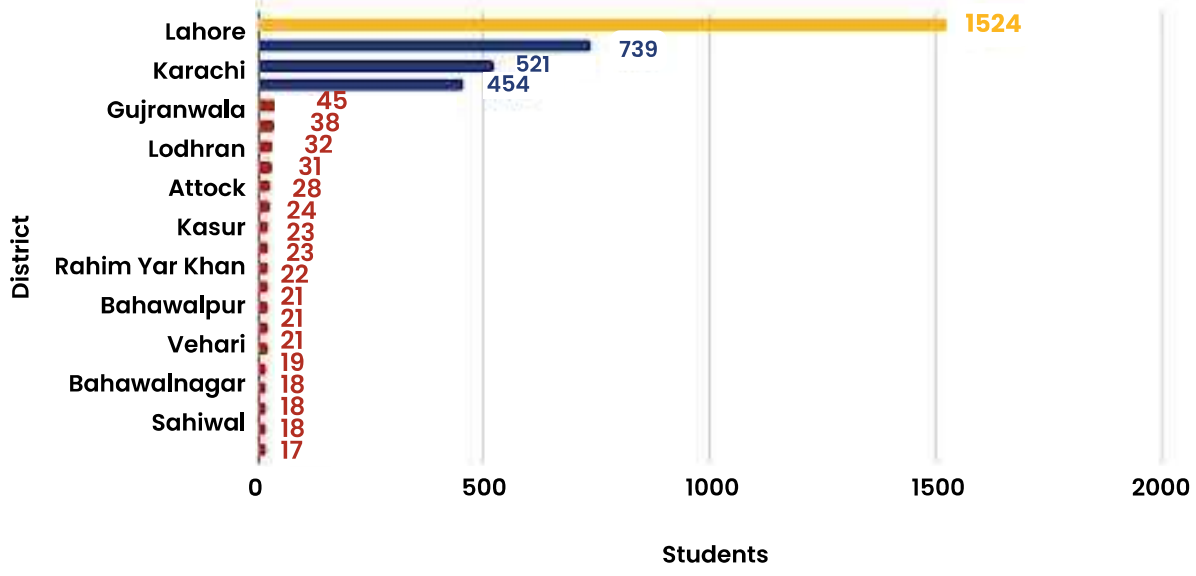
Demographics of Enrolled Students

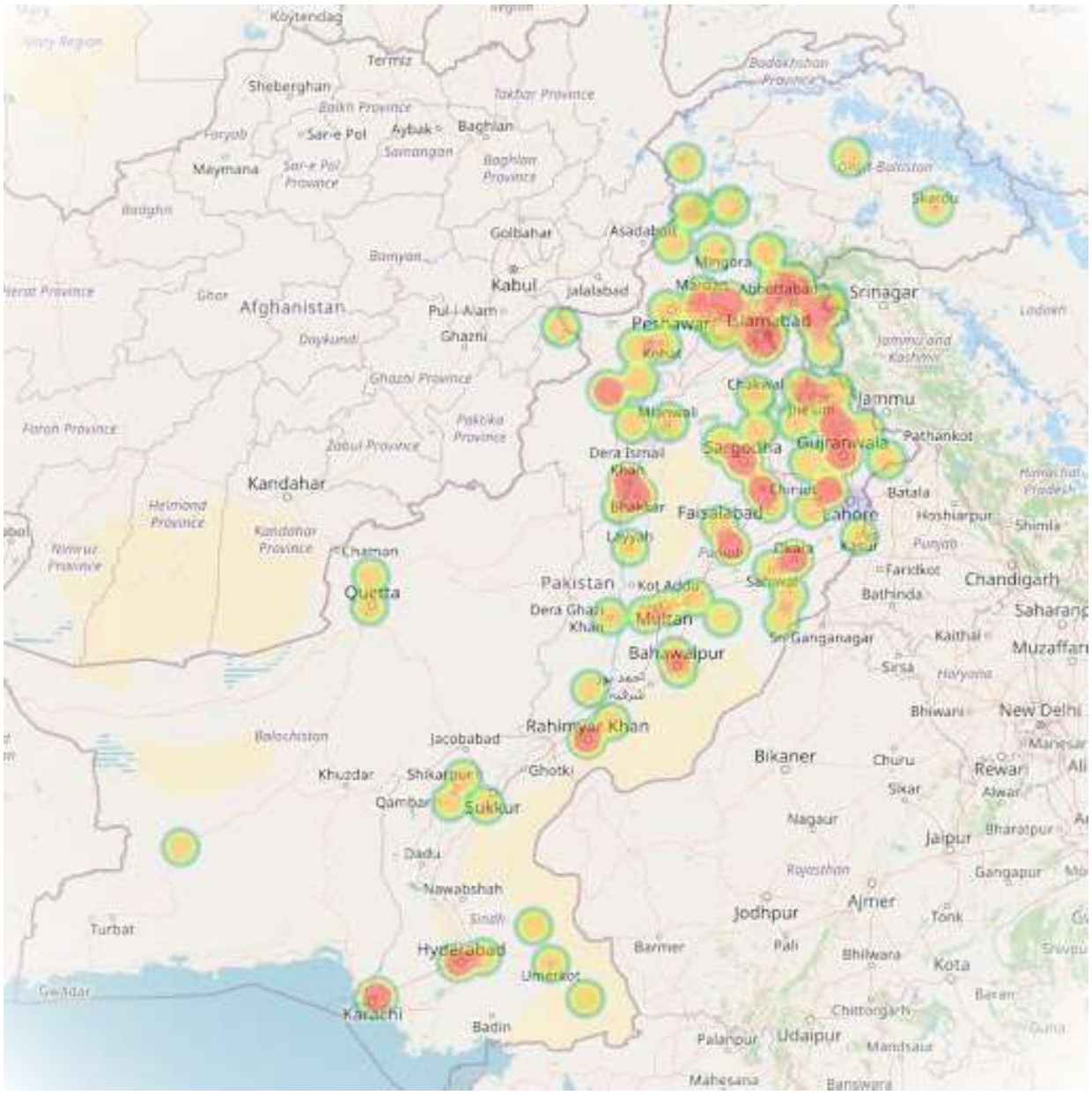
Domicile of Enrolled Students

As expected, out of the program conducted in KLI, the majority of the students enrolled came from Lahore, followed by Rawalpindi, Karachi and then Islamabad. It is interesting to note here that despite having the training locations in the three Tier 1 cities, a fair number of students came from Tier 2 and Tier 3 cities of Punjab.

Districts With Most Enrolled Students

Only include those with more than 20





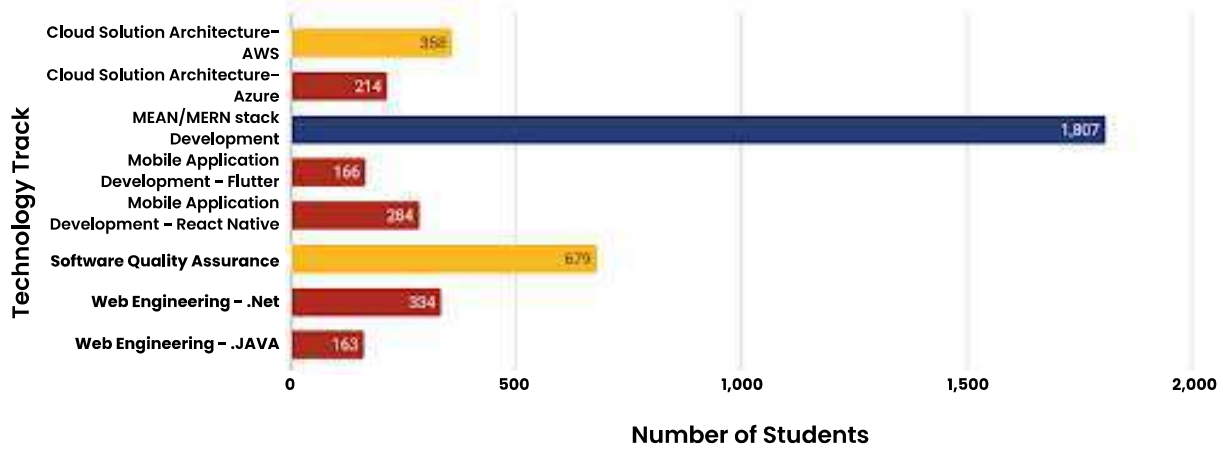
As seen in the heatmap above, the student participation was not limited to the three cities. Techlift touched all provinces and regions including Azad Jammu and Kashmir and Gilgit Baltistan. The interactive Map is placed on the link below that shows participation from and location of districts with Techlift's footprint.

https://bit.ly/TechLiftfootprint

Domicile of Enrolled Students

Distribution of Enrolled Students

Number of Students vs. Technology Track

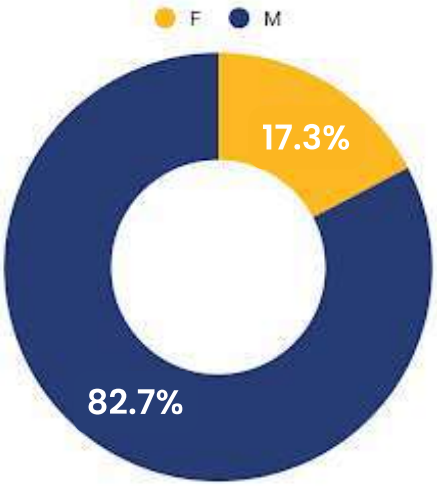


The highest enrollment was in MERNStack Bootcamps. To meet the high demand, companies increased the number of MERN bootcamps offered, partly to align with their own capacity and industry requirements. In terms of popularity, Cloud and SQA programs ranked as the 2nd most sought-after programs. The over-subscription to MERN and the under-subscription to Web-Engineering was partly a reflection of student aspirations not totally aligned with industry-demand.

Gender

Gender Wise Distribution

Counting all students that were enrolled

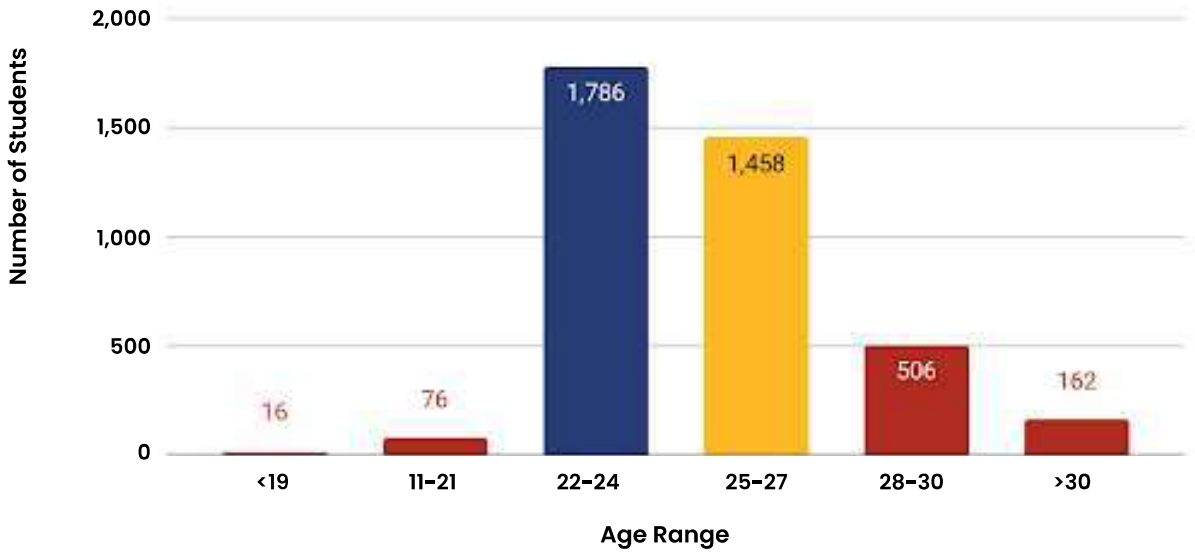


As discussed in the registrations section the data paints a similar picture with a low induction of female students. A case could be made for Online vs Hybrid setting. The problem is not quite different from the challenge in the IT industry as a whole. Later on in the report we further investigate the issues and challenges through Student surveys. We will have better clarity from that section and insights on what could be the reason behind this imbalance.

Age

Age Wise Distribution

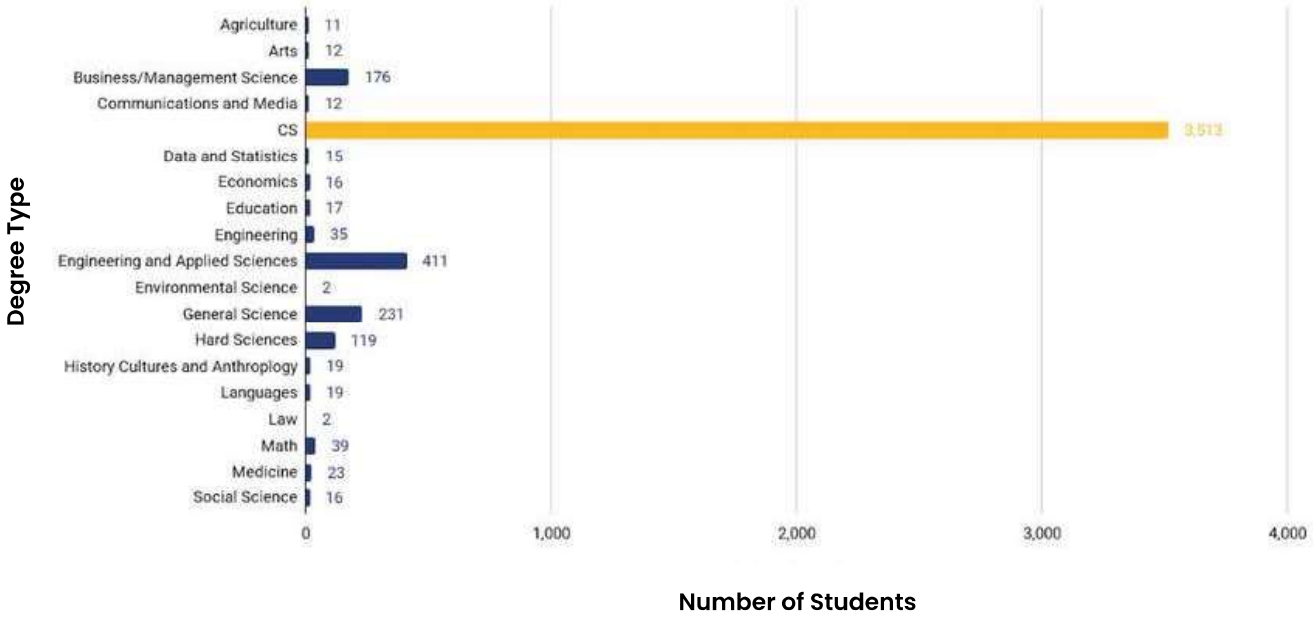
Number of Students vs. Age Range



It is interesting to see that the ages between 25 to 30 collectively make up 2,200 students. This is the older population including those who graduated in the earlier years of the eligible range (2017 - 2022) the second most common age group was 21 to 24 years with 2183 students being enrolled in the program.

Educational Background

Number of Students vs. Degree Type



There is a very prominent share of students with a Bachelor in CS education (both CS and IT). One reason is the program's nature since it is related to IT and requires a certain familiarity with the subject while also the IT industry has the most jobs out of all other industries for the graduates. This context adds an interesting perspective to the data. Here's the revised discussion:

Computer Science (CS) Dominates:

The field of Computer Science stands out significantly with 3,513 enrolled students. This high enrollment can be attributed to the increasing demand for IT professionals in various industries. With the rapid advancement of technology, companies are actively seeking skilled individuals in computer science to fill positions in software development, Web Engineering, Cloud solutions, and more.

Engineering and Applied Sciences:

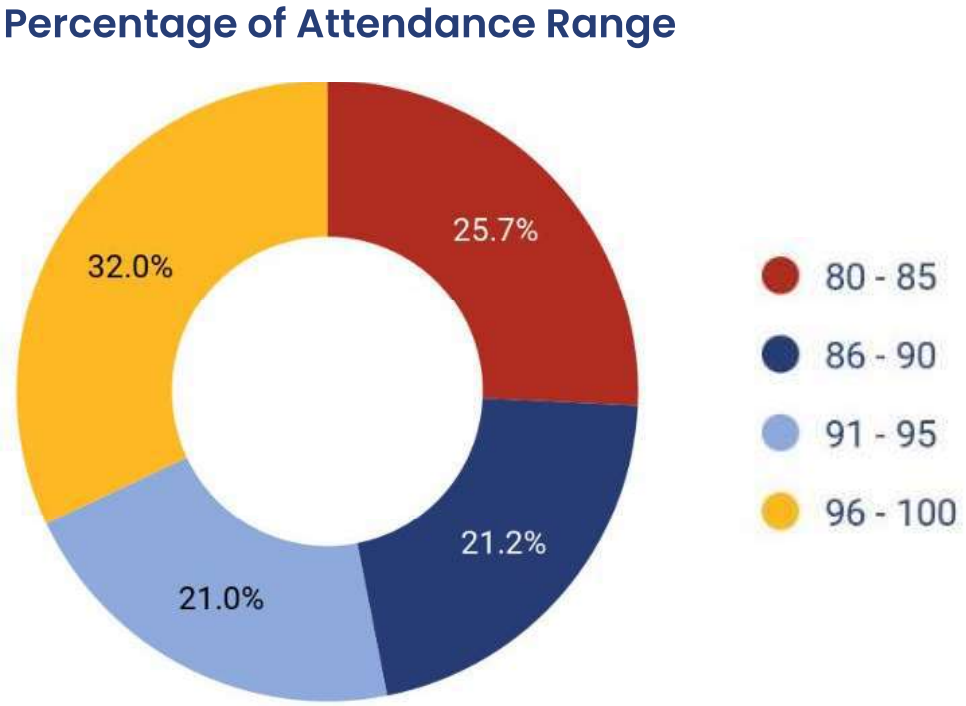
Despite the relatively high enrollment of 411 students in the Engineering and Applied Sciences field, it's worth noting that there might be a higher supply of graduates compared to the number of available job opportunities in some engineering disciplines. This could be due to factors such as market saturation, industry-specific demands, or a shift in the job market. As a result, some engineering graduates may choose to pursue additional IT training to enhance their employability in the technology sector. They certainly have the calibre to learn programming since they usually have some familiarity with basic programming.

Other Fields with less than 300 students:

The significant enrollments highlight the interest among students to transition from their scientific/business or arts related knowledge to IT skills. Again the availability of jobs is a major deciding factor.

Student Performance

Attendance

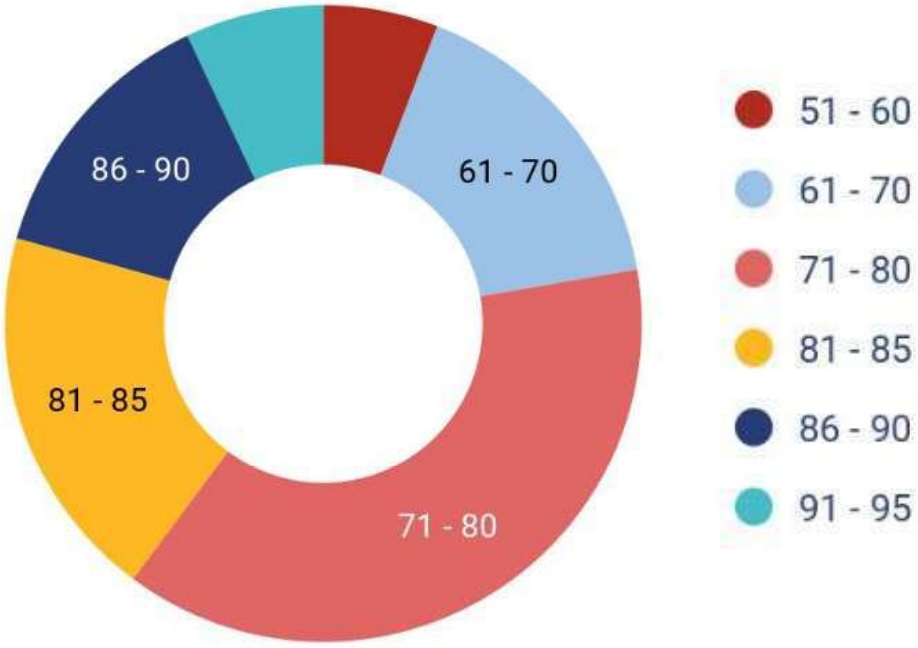


The attendance at the program is impressive, with a majority of the total students (70%+) maintaining an attendance record of over 85%. This remarkable statistic highlights the high level of interest and dedication displayed by the students. Even though the program is offered free of charge, the students have willingly invested their time and effort to acquire knowledge and develop valuable skills. Such enthusiastic participation only reinforces the case for implementing similar initiatives, as they clearly benefit both the students and the industry at large.

Performance in Bootcamps

Performance of Students

Range of Percentage Scores



The program implemented a well-designed assessment process during execution. This process involved marking students on tests, projects, and assignments. More than 75% of the total students' overall performance exceeded 71% mark. However, there is ample opportunity to enhance the scoring and marking criteria and establish standardized guidelines for all future bootcamps. By refining these criteria, the program can provide a more consistent and reliable measure of student progress. Additionally, this performance metric can serve as a valuable tool for potential employers to evaluate trainees, while also allowing the program to recognize and appreciate high-performing students.

75% Students Scored Desirable Results

7

Employment and Industry Placement

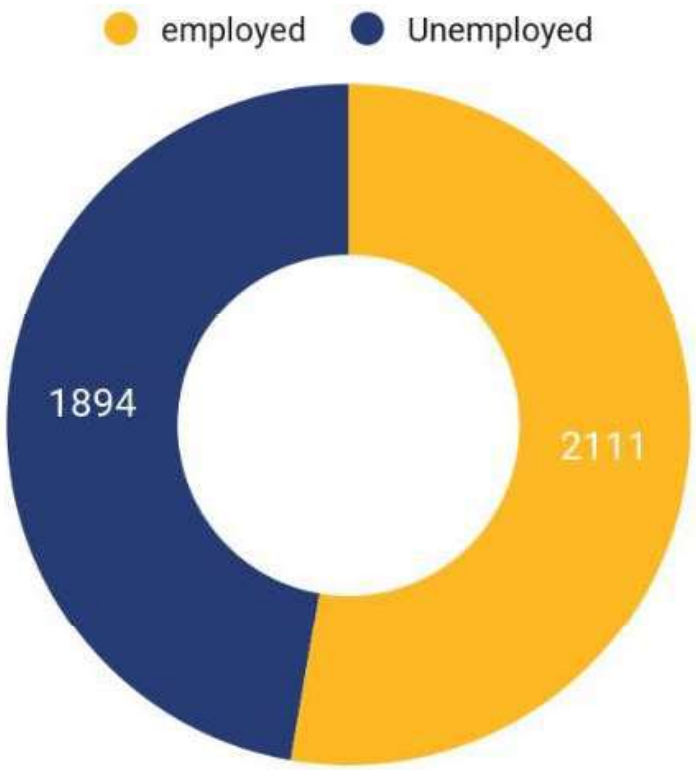
This section looks at the placement and employment of TechLift trainees.

Employment and Industry Placement

Employment is the prime indicator for Techlift's Performance Measurement. This section will look at the overall rate of employment including self employment (Freelancing) and Partial Employment of Techlift Graduates.

Performance of Students

Employed vs Unemployed



Over 50% of graduates are employed within 15 days of program of program closing.

Looking at the above chart it is evident that more than 52% of the Techlift graduates have successfully become part of the industry. Considering that the **program only concluded 15 days before the data on employment is collected,** these numbers are expected to grow even further. Further breakdown of the employment number is shown below in the pie bar graph.

PKR 45,948.39

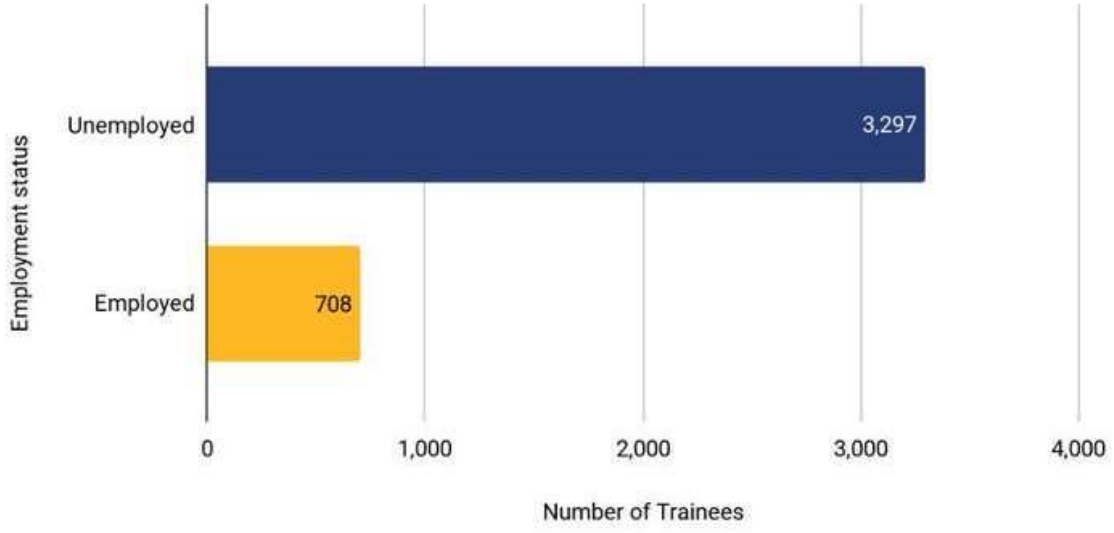
The average salary of a Techlift Graduate

Employment of Techlift Graduates

Employment After Techlift

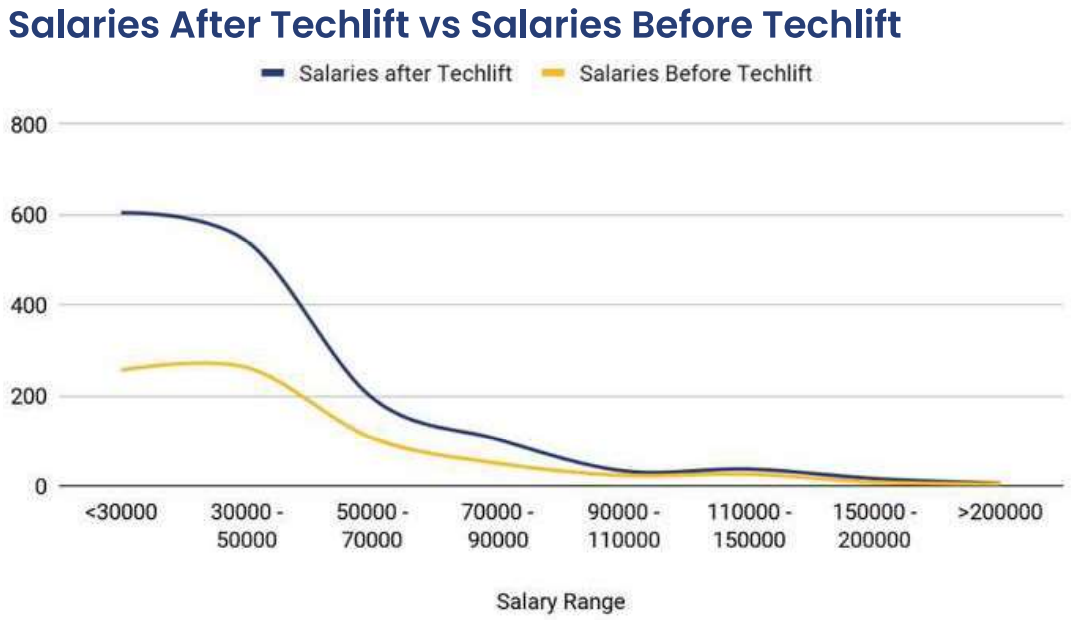
The self-employed and part time workers are very few considering the overall number of employed graduates. This shows that the actual aim of the project, placement in the IT industry is being met.

Employment Before the Program



If we further look at the employment statistics before the program it is clear that there has been more than 100% increase in employment so far.

Salary Comparison



As seen in the graph the overall graduates with starting to mid level salary ranges have increased significantly. The starting peak of the graph is for the students earning the starting level salaries. The graph shows twice as many graduates with this salary range . The graph gradually decreases as the salary range increases and the difference between the two gets tapered at higher salary levels. The data is consistent with the design of the program which is to create more starting level employment through skilling. The higher salaries are more suitable for upskilled individuals.

Impact of Techlift's Employment on IT Exports

Employment in the IT industry is directly linked with exports and that has been the reason behind conducting this training initiative. Considering the estimated average export earned per person which equals to USD 10,000/person (calculated by dividing total exports for the year with total resources in the IT sector), we can calculate the amount of exports Techlift Graduates will create.

2,111
Resources

$21.1 Million
Worth of Exports

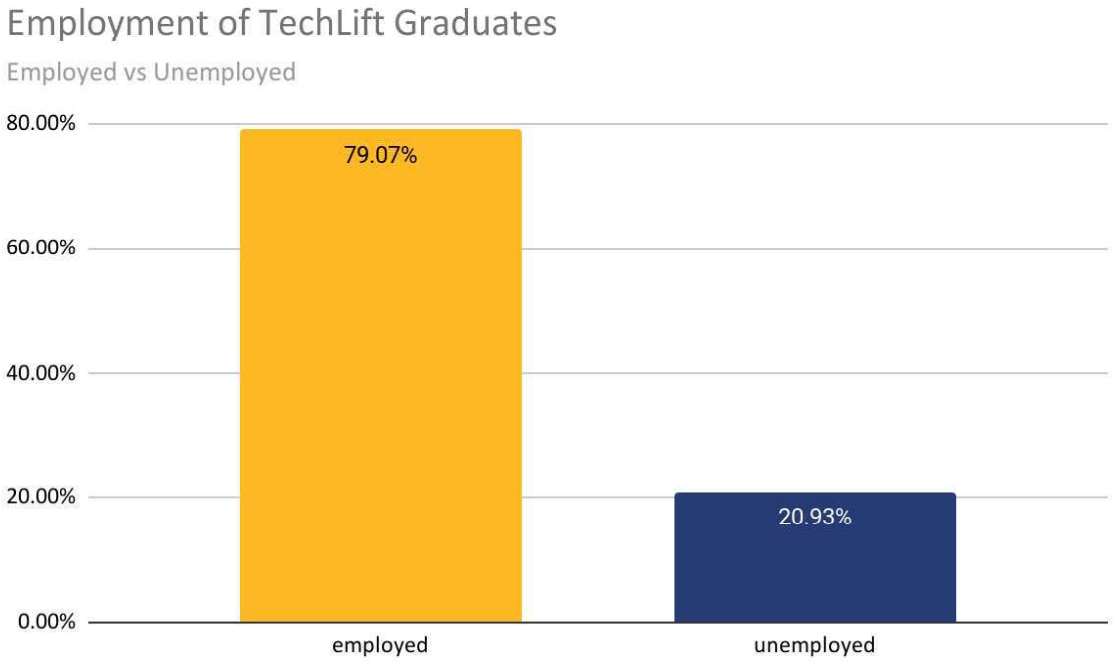
2111 resources hired to generate **USD 21.1 million in exports** in the next year.

**this is based on the data 15 days after the program.*

Revised section with the updated employment data from January 2024

January 2024 Update: Analyzing Employment and Industry Placement

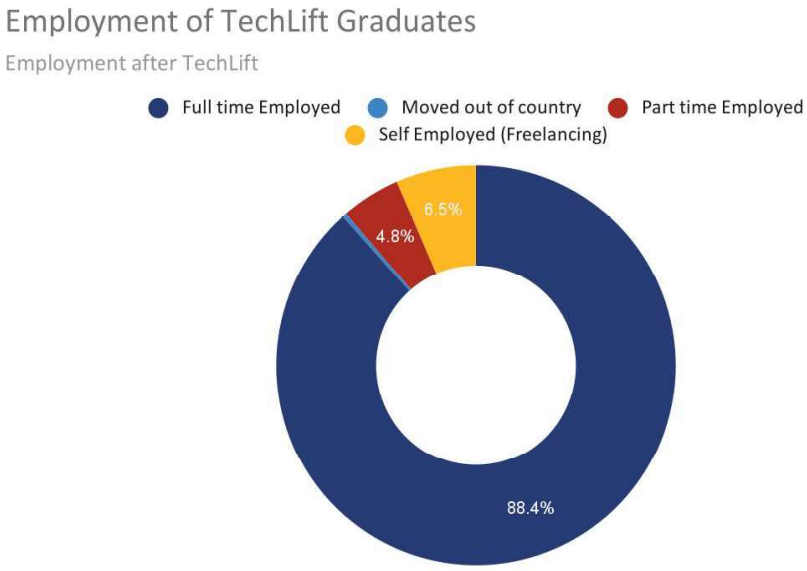
Employment stands as a key metric for evaluating Techlift's performance. The following 3-page addendum has been inserted into the original Impact Assessment report received by PSEB on 30th August 2023, to provide an update on graduates' employment statistics, around **six months subsequent to the original assessment.** This detailed analysis aims to highlight Techlift's impact in enabling employment and industry growth.



The employment rate for graduates has experienced a remarkable surge, reaching an impressive 79%. A more in-depth examination of the current employment status, categorized into self-employment, partial employment, and opportunities for relocation to foreign countries, reveals a promising trajectory of success for the program. This comprehensive overview not only underscores the effectiveness of the program but also reinforces the notion that with P@SHA's support and upcoming employment opportunities, these graduates stand to benefit further, contributing to the program's overall success.

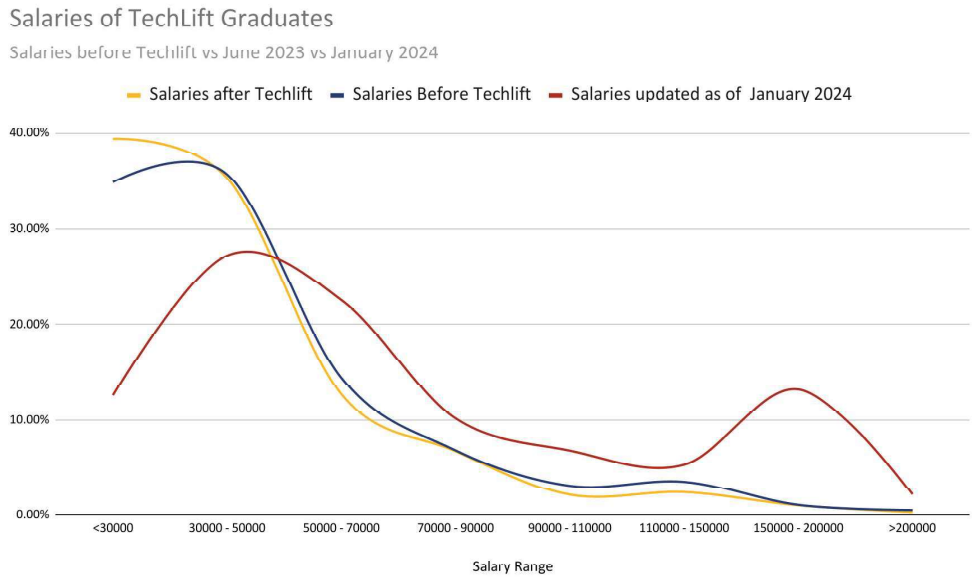
The latest analysis is based on a response rate of 56.67%, indicating that the data used for the analysis was gathered from 2,267 graduates who completed the data collection forms, representing a portion of the total surveyed population of 4000 graduates.

Revised section with the updated employment data from January 2024



Observing the chart above, it is evident that over **88% of employed Techlift graduates are working in full-time roles**. It's noteworthy that the program concluded eight months before the employment data was collected, indicating the potential for further growth in these figures. A detailed breakdown of the employment numbers is depicted in the pie bar graph below.

Salary comparison



As illustrated in the graph, graduates within the starting to mid-level salary ranges have transitioned towards higher income brackets. The initial peak in the

The latest analysis is based on a response rate of 56.67%, indicating that the data used for the analysis was gathered from 2,267 graduates who completed the data collection forms, representing a portion of the total surveyed population of 4000 graduates.

graph has shifted towards mid-level salaries, indicating a notable increase. Specifically, the data reveals a threefold growth in the number of graduates earning between 150,000 and 200,000. While the graph exhibits a gradual decline as salary ranges increase, the disparity diminishes at higher income levels. This data aligns seamlessly with the program's objectives, emphasizing not only increased employment through skill development but also the attainment of well-paying positions for graduates.

Impact of Techlift's Employment on IT Exports

Keeping the same assumption as the previous analysis and considering the estimated average export earned per person which equals to USD 10,000/person (calculated by dividing total exports for the year with total resources in the IT sector), we can calculate the amount of exports Techlift Graduates will create.

79.07% of the total graduates or **3,163 resources** hired so far **will earn USD 31.63 Million worth of exports** in the next year.If we calculate the export contribution of each trainee for the next five years at a 5% increase in Exports per year it adds up to **USD 174.8 Million** by 2028.

Years	Employed Graduates	Per employee's export contribution (at 5% YOY growth)	Total export Contribution
Year 2024	3,163	10,000	$31,630,000
Year 2025	3,163	10,500	$33,211,500
Year 2026	3,163	11,025	$34,872,075
Year 2027	3,163	11,576	$36,615,679
Year 2028	3,163	12,155	$38,446,463
Total			**$174,775,716**

PKR 82,134.27

Average Salary of a Techlift Graduate

USD 174.8 Million

Total Expected Exports Contribution till 2028

The latest analysis is based on a response rate of 56.67%, indicating that the data used for the analysis was gathered from 2,267 graduates who completed the data collection forms, representing a portion of the total surveyed population of 4000 graduates.

8

Project Learning

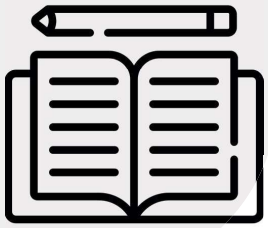
Program Performances from Students' and Trainers' Perspectives

Project Learning

Program Performance from Student Perspective

To measure the impact of the program from a student perspective, a survey was rolled out to be filled by all students enrolled into the program. The survey was

Key Insights from **Student Survey**



- **70.3%** students agreed that the curriculum was easy to follow
- **71%** percent of the Non CS students agreed that PF curriculum was easy to follow
- **70.6%** of student agreed that the allotted time was sufficient to learn.
- **85%** students agreed that the practical work included in the curriculum was effective.
- More than **88%** agreed that the PF was relevant to the main track.

- **83%** students agreed that Soft Skills trainer prepared them to get a Job
- **88%** students agreed that the Technical Knowledge was easy to learn from the trainer.
- **81%** students agreed that the trainers gave them adequate time and attention
- **87%** agree that the trainer listened to them
- **84%** agreed that the trainer utlized the complete training time efficiently and effectivey

- **91%** students would recommend the program to others
- **93%** students would like the program to be continued.

submitted by 744 students. The results are summarized in the following section where the report explains three types of data collected from the respondents:

01 **About the Curriculum:**
The feedback will be focused on the overall quality of curriculum and its relevance for soft skills, main track curriculum and Programming FUndamentals

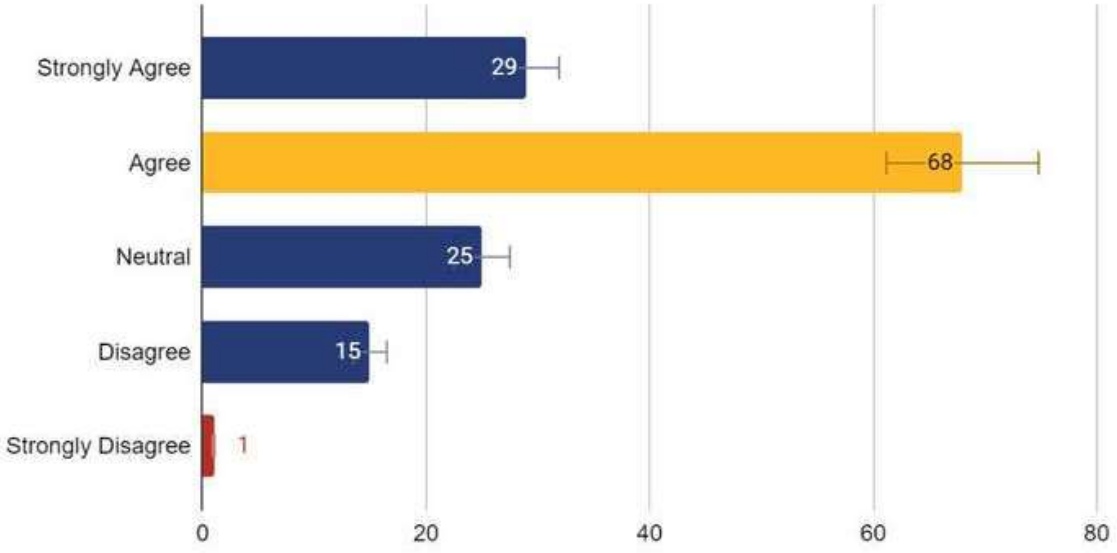
02 **About the Trainer:**
This section will provide feedback on the competence, commitment and overall quality of a trainer

03 **About the Training:**
This section will focus on the quality of training and feedback on the execution.

About the Curriculum

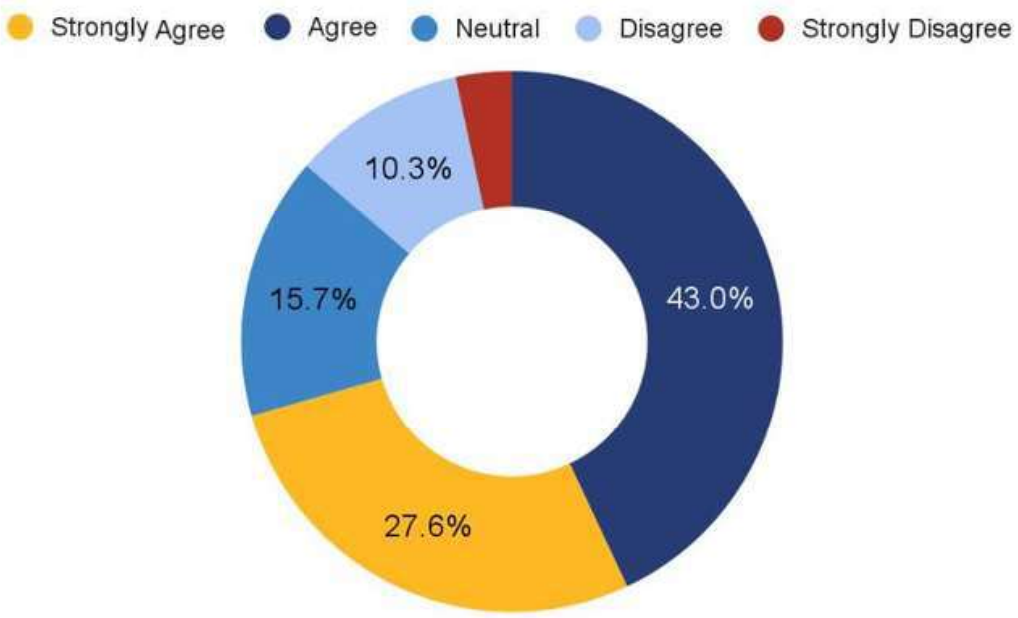
Main Technology Track

Was it Easy to Follow



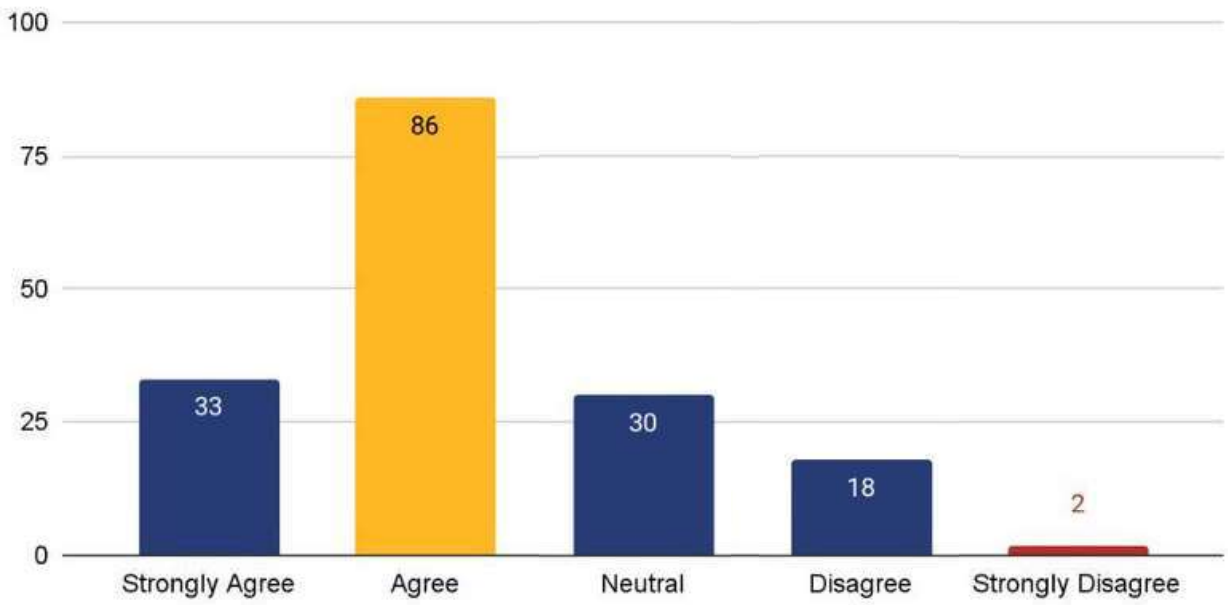
Allotted Training Hours

Were training hours sufficient to learn



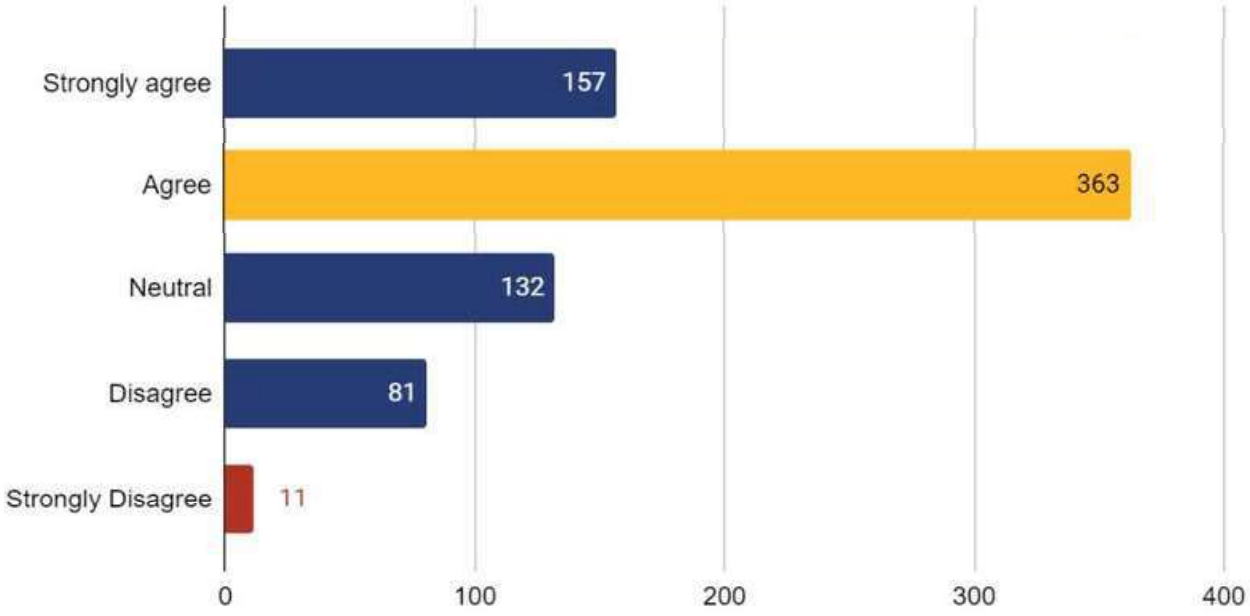
Programming Fundamentals

Was it easy to follow



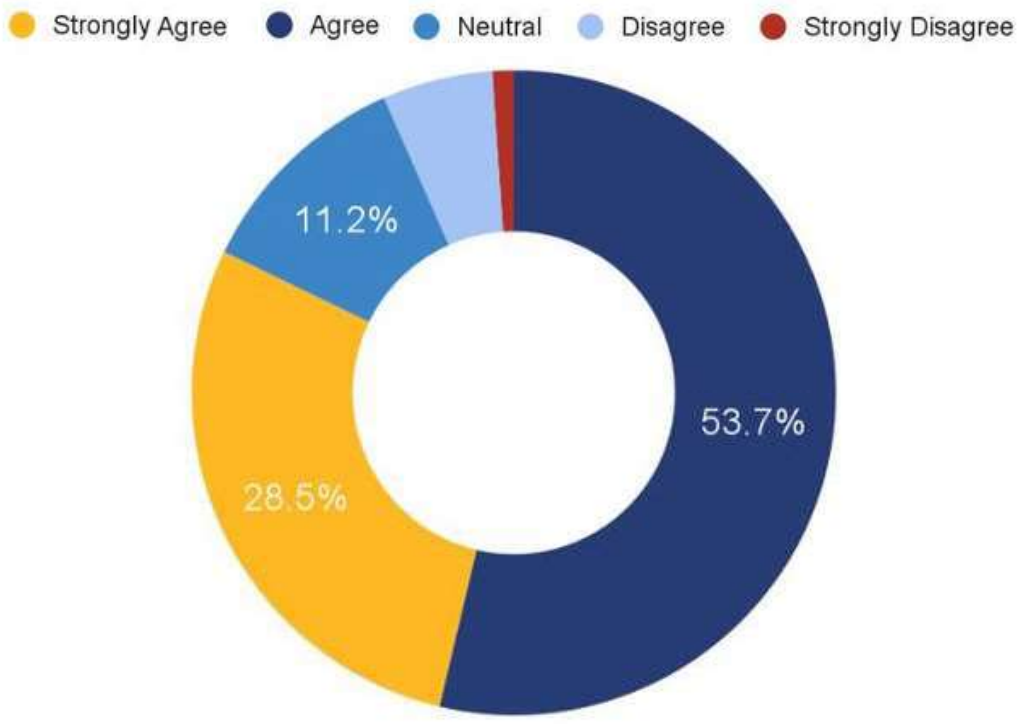
Programming Fundamentals

Was it detailed?



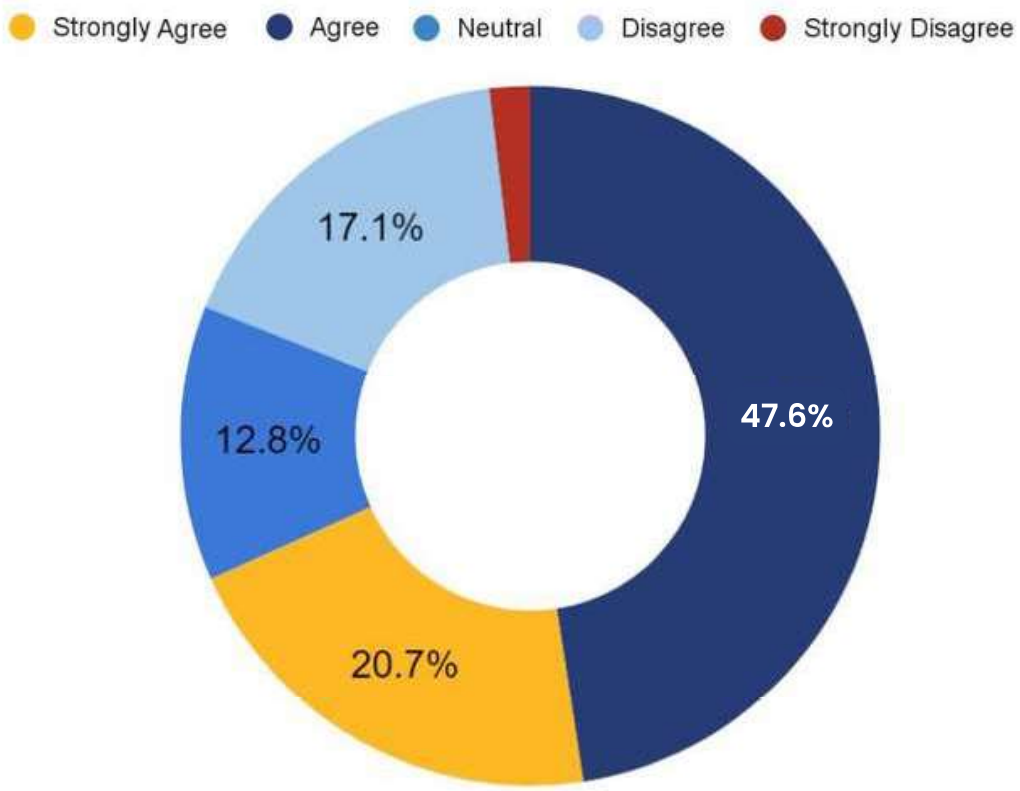
Programming Fundamentals

Was it relevant to the main Technology track training?



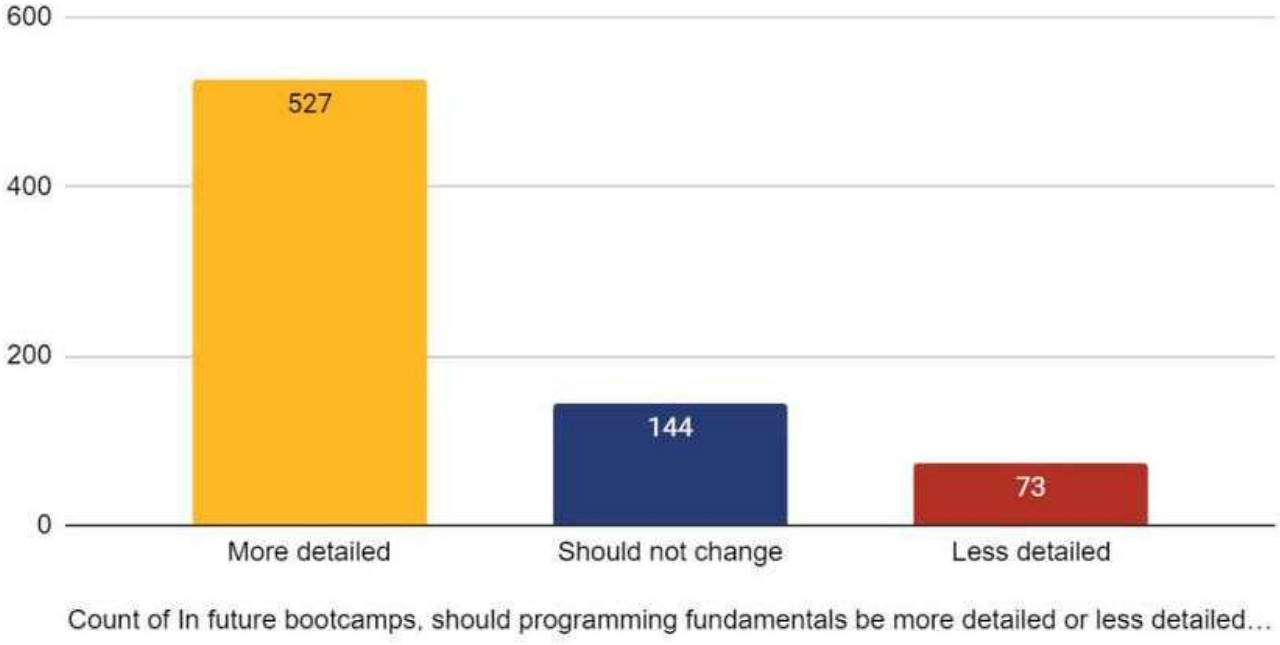
Allotted Time for Programming Fundamentals

Was the time sufficient to learn?



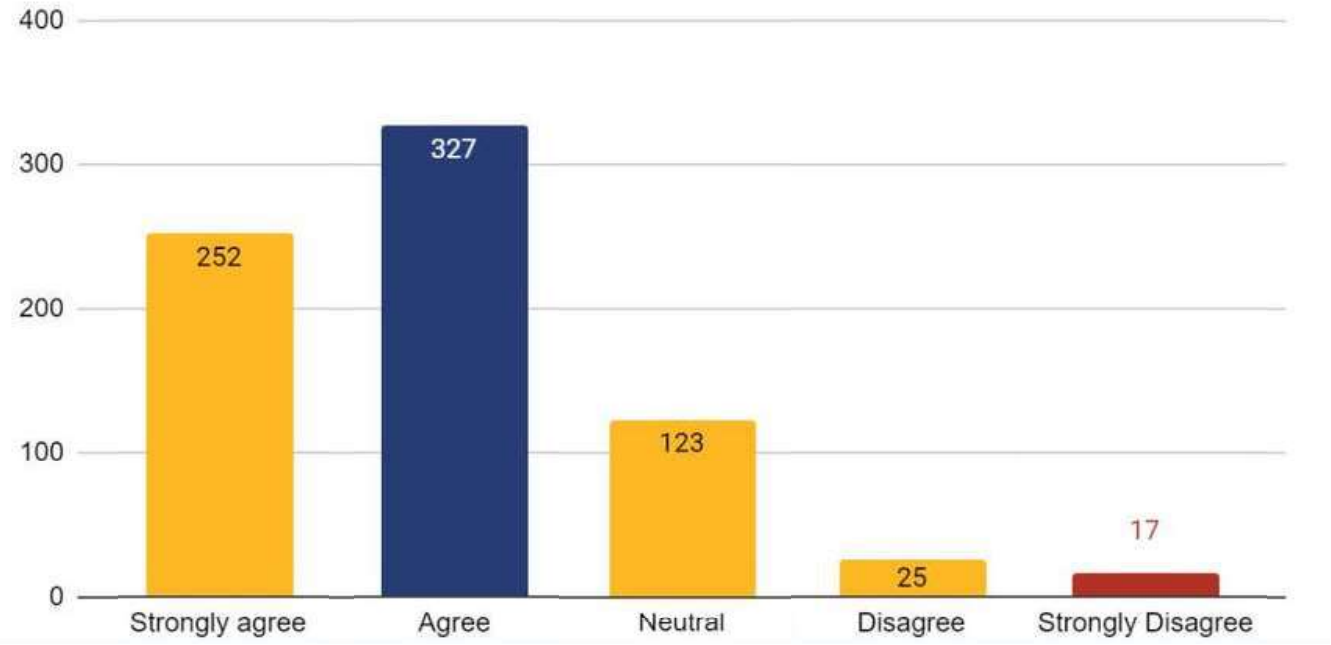
Programming Fundamentals

Should it be more or less detailed in future bootcamps?



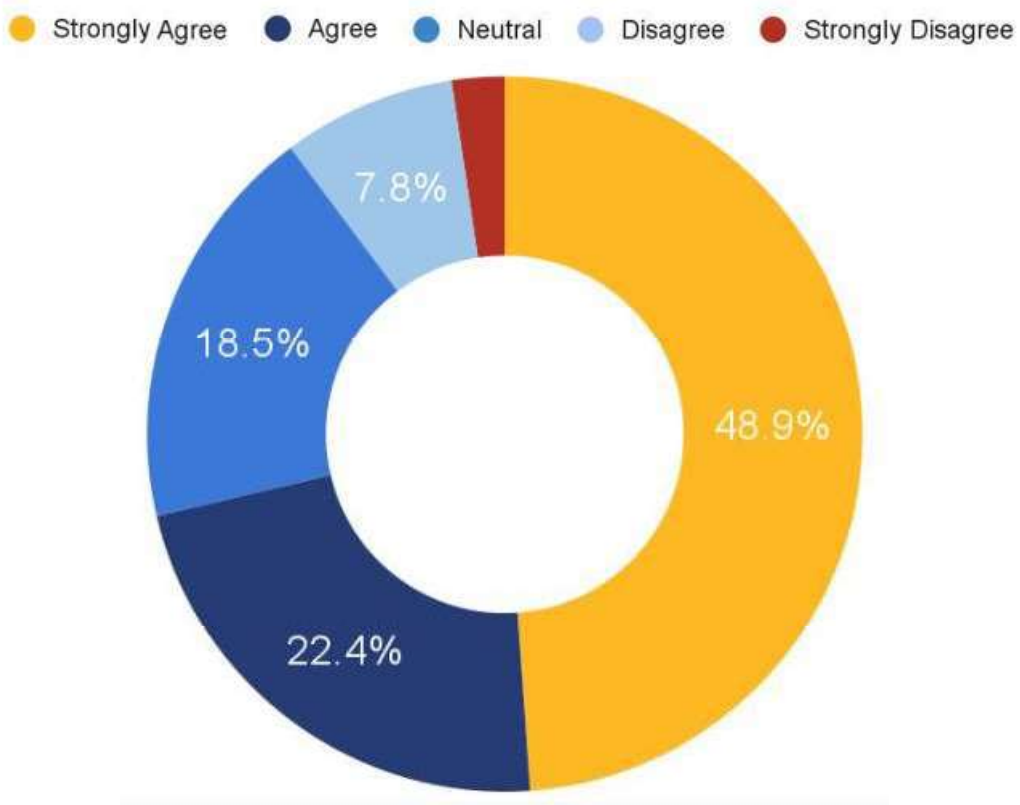
Soft Skills Curriculum

Helpful in getting interview ready



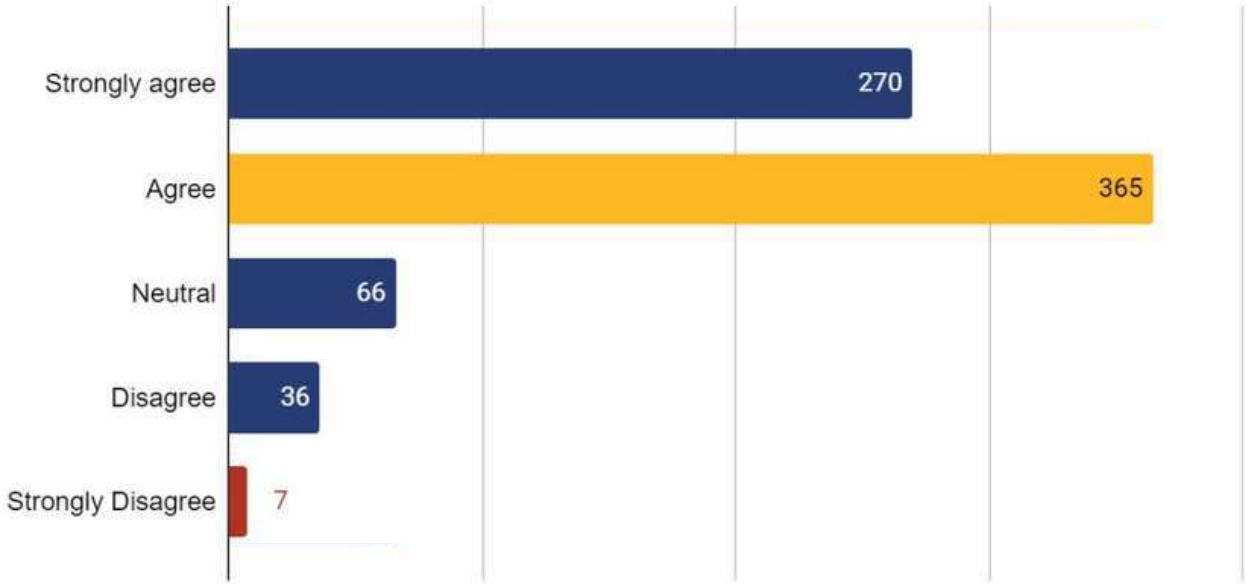
Soft Skills Curriculum

Were 30 hours sufficient?



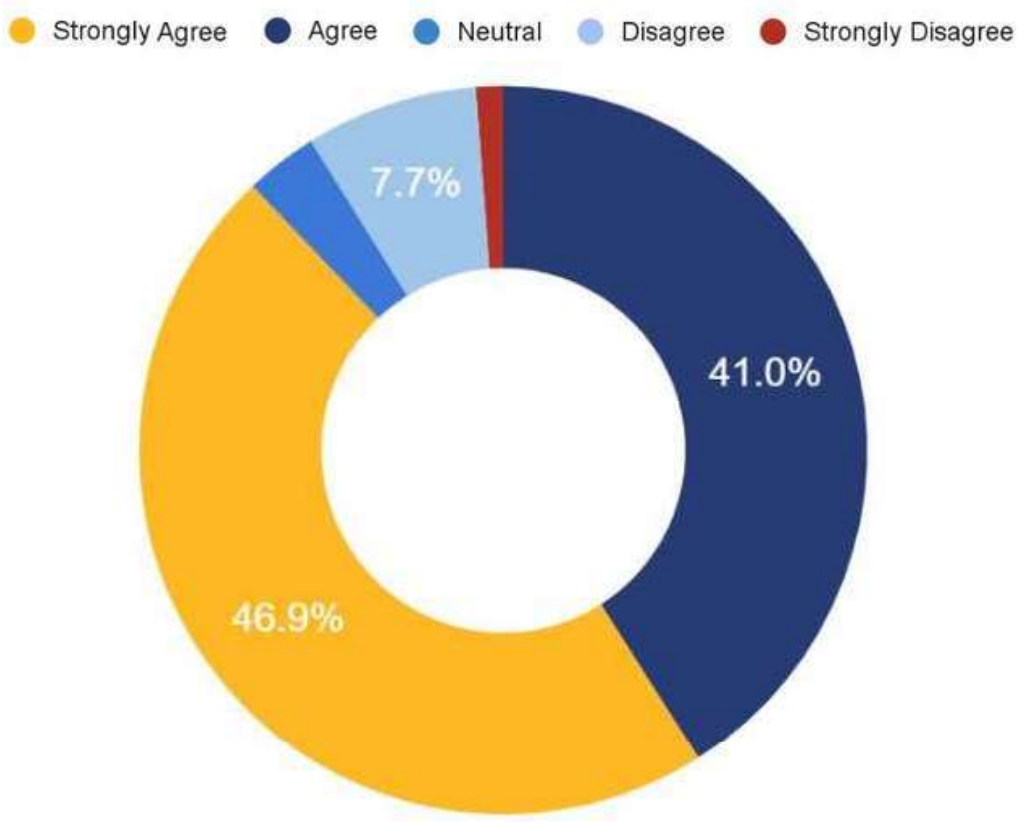
Practical Exercises and Projects

Did the exercises enhance the learning experience



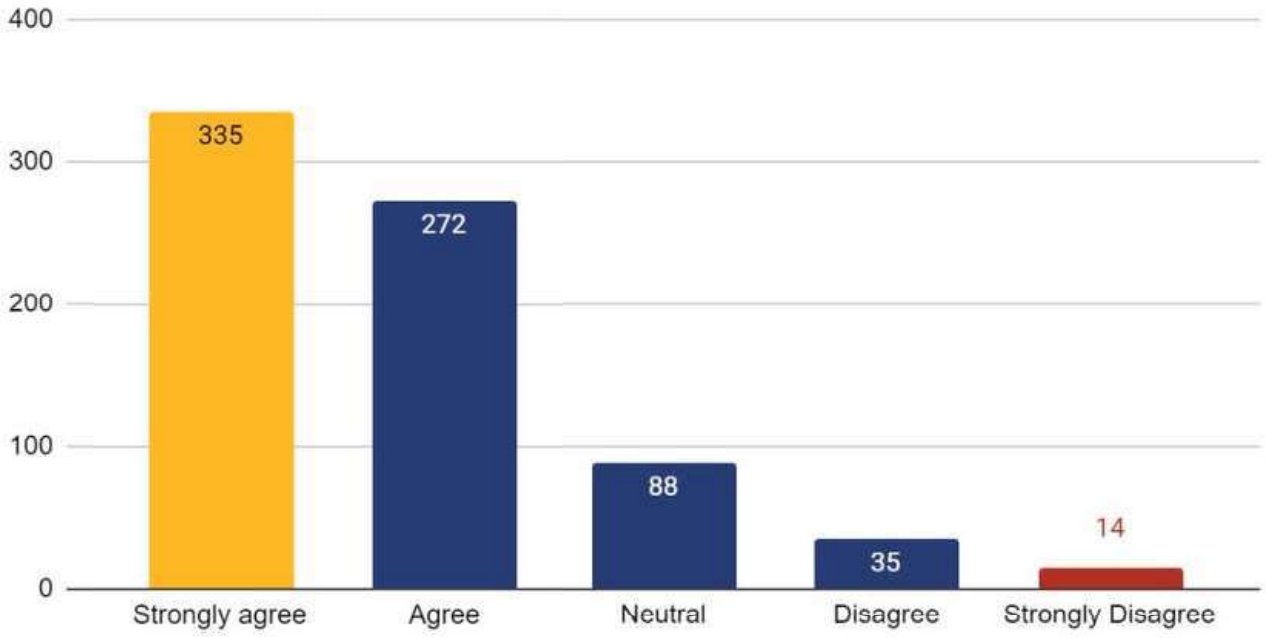
Technical Knowledge

Was it easy to learn from the trainer?



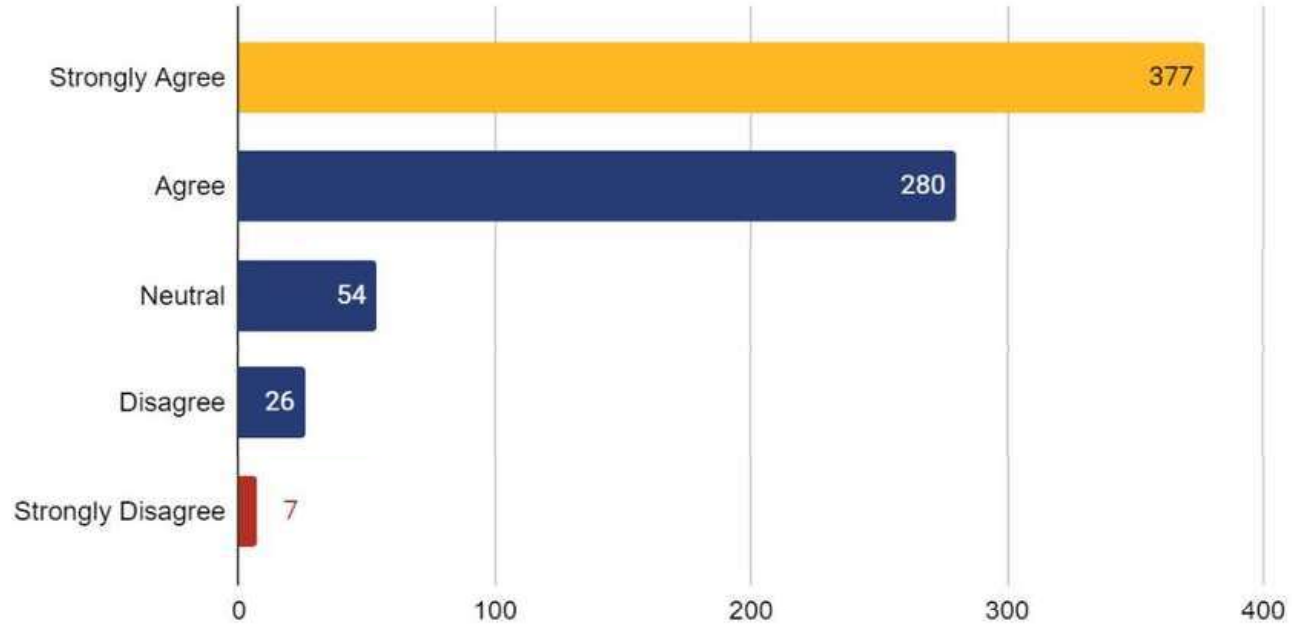
Trainers

Did trainers give adequate time, focus and attention to students



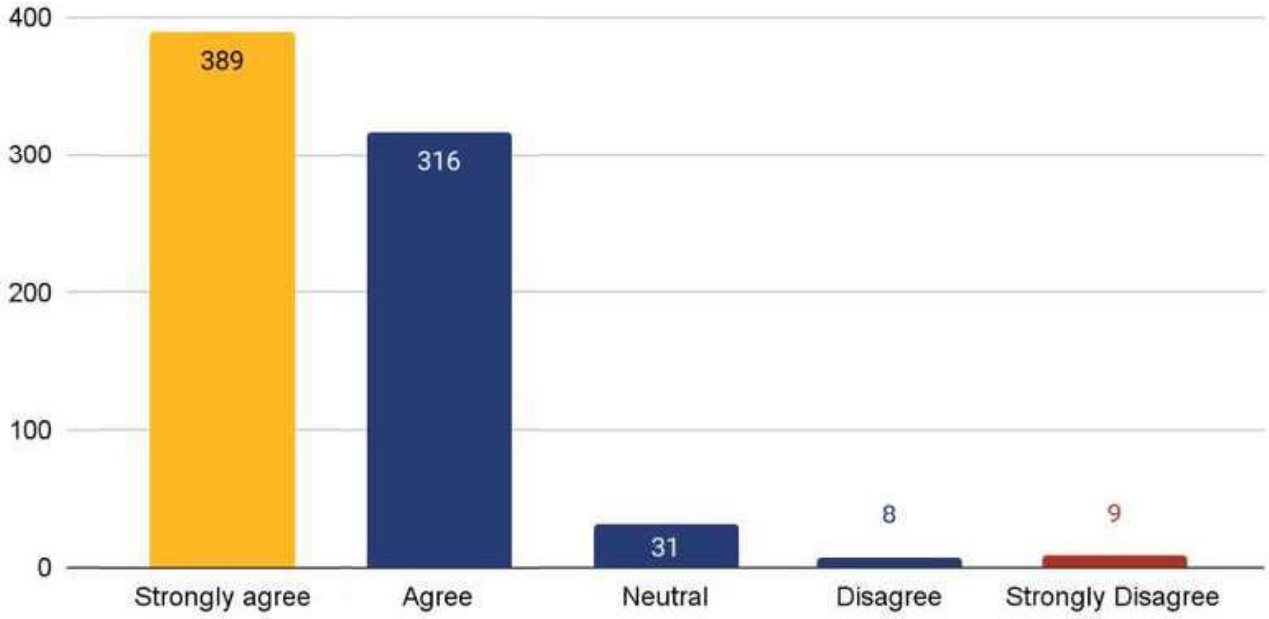
Trainers

Did trainers listen to questions and answered them thoroughly



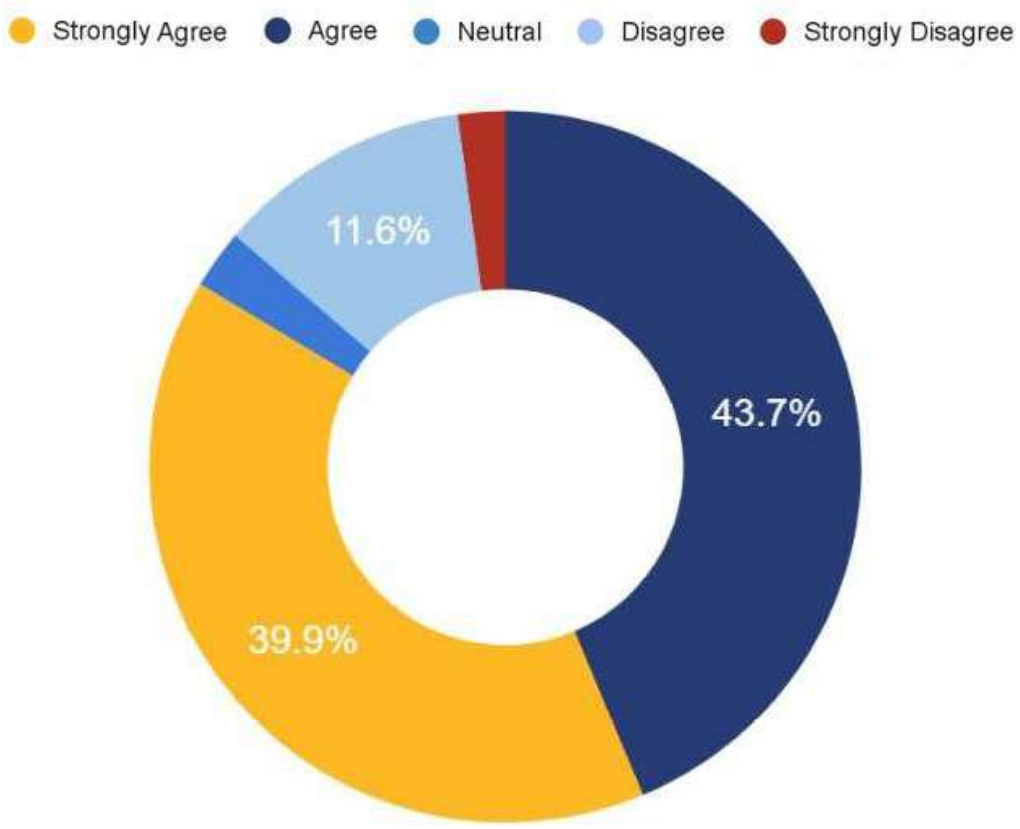
Soft Skills Trainer

Trainer had sufficient subject knowledge



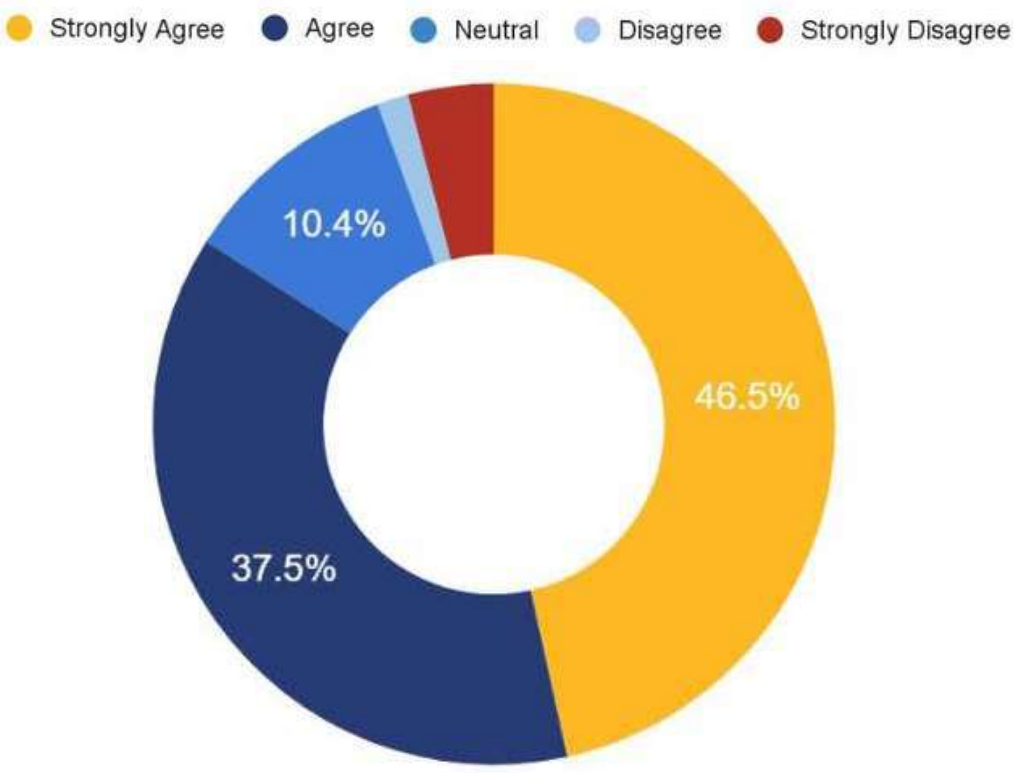
Soft Skills Trainer

Did the trainer help in preparing for the job interview



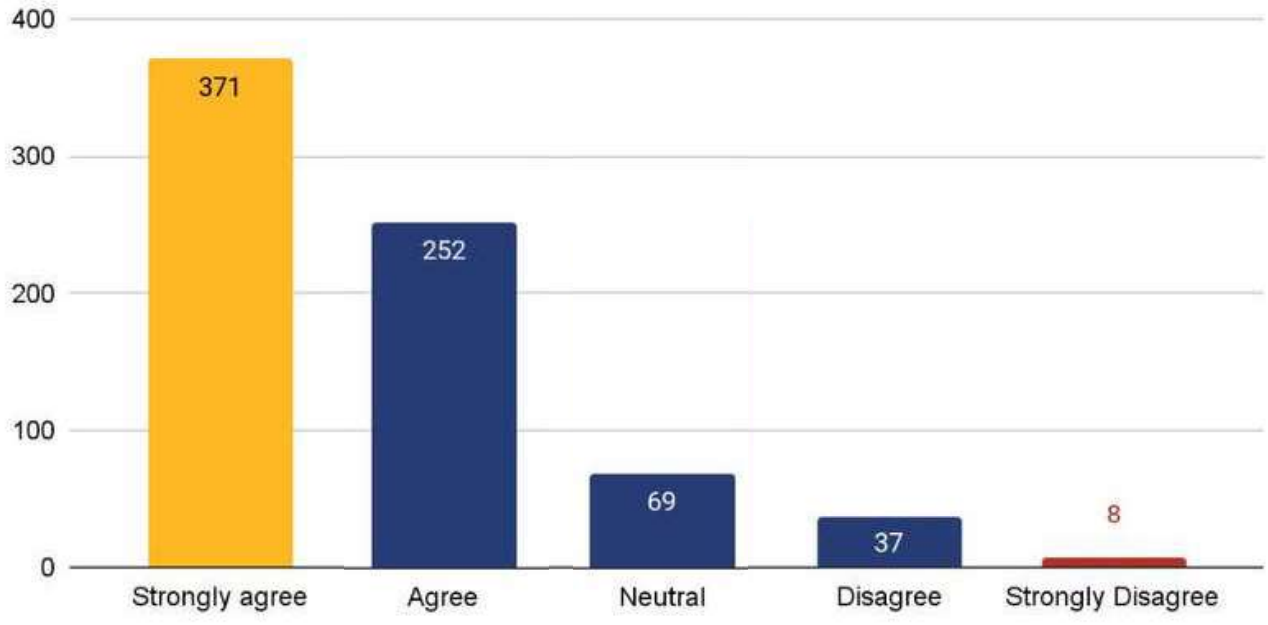
Trainers

Did trainer utilize time to complete the course in time?



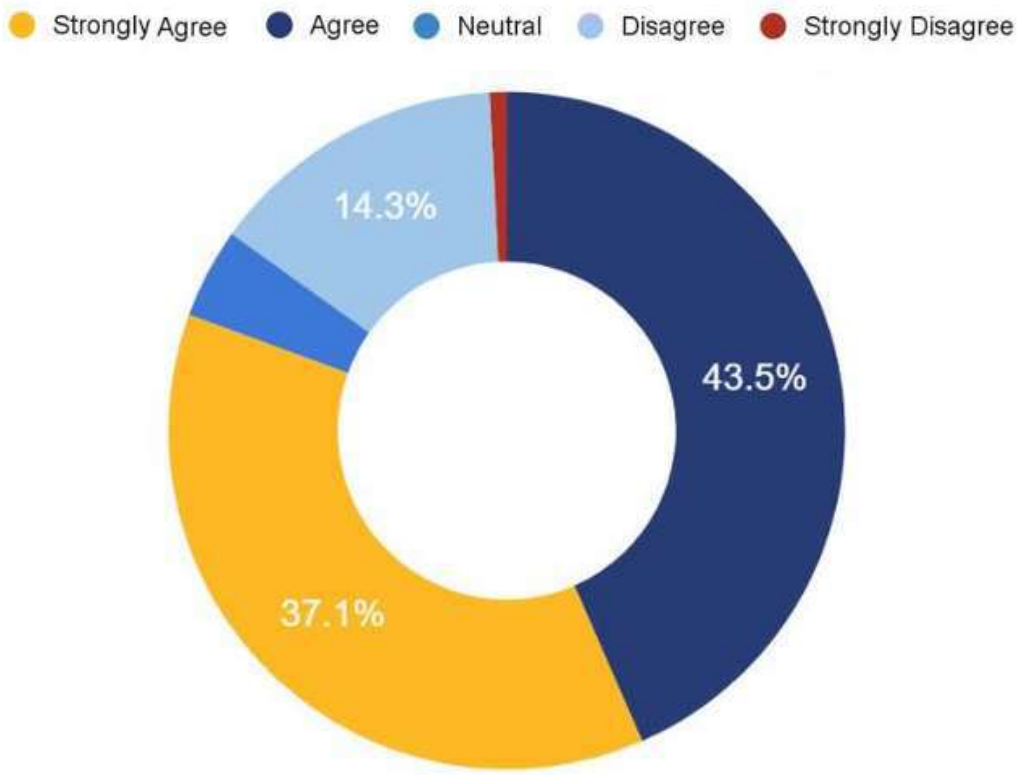
Trainers

Did trainer give real world examples?



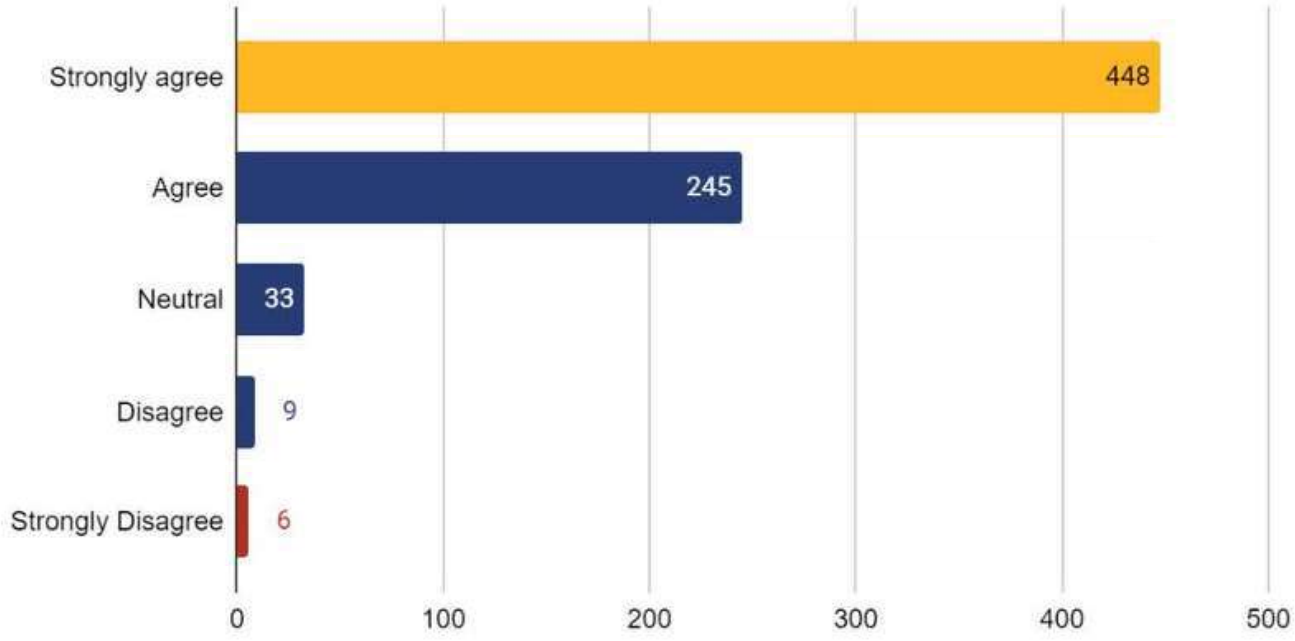
Training Impact on Employability

Did the training help in increasing chances for employability?



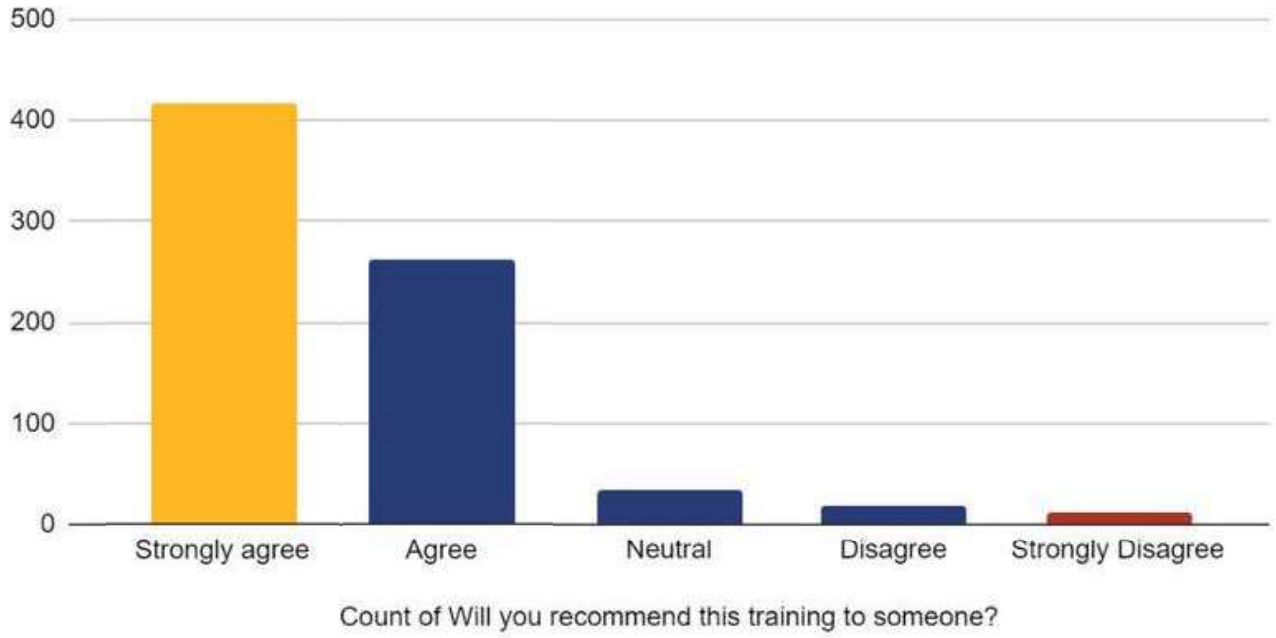
Program Continuity Recommendation

Should the program be continued/launched again?



Program Referral Recommendation

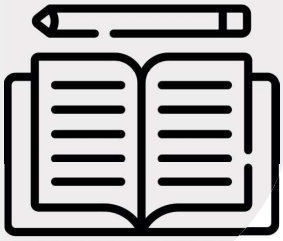
Recommend training to someone



Program Performance from Trainers' Perspective

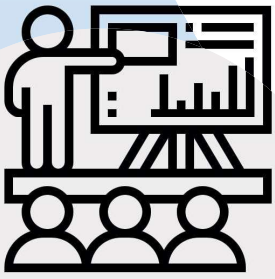
To measure the impact of the program from a trainer perspective, a survey was rolled out to be filled by all students enrolled into the program. The survey was submitted by 97 trainers. The results are summarized in the following section.

Key Insights from **Trainer Survey**



- **81%** trainers agreed that curriculum was for 16 years educated graduates
- **87%** trainers agreed that the curriculum was industry relevant
- **88%** trainers agreed that the LOs were communicated clearly to the trainers
- **82%** trainers agreed that curriculum covered adequate subject knowledge
- There was **51%** agreement on the number of allotted hours being adequate

- **83%** trainers said that the lab equipment was sufficiently available
- **91%** trainers agreed that the trainings were well planned
- **79.4%** trainers said that the cohort size was ideal.
- **91%** agreed that the training time was planned well enough to cover soft skills

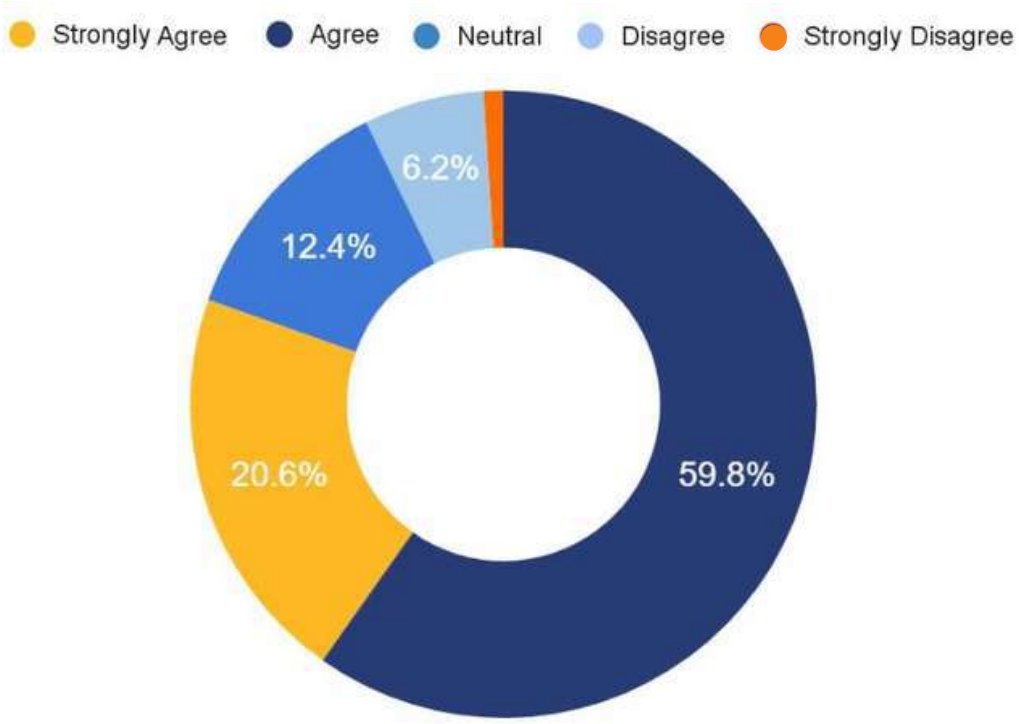


- **97%** agreed and None of the trainers disagreed to program being effective
- **98%** agreed and none of the them disagreed to program's continuation
- **85%** agreed that the teaching helped them relearn the concepts

About the Curriculum

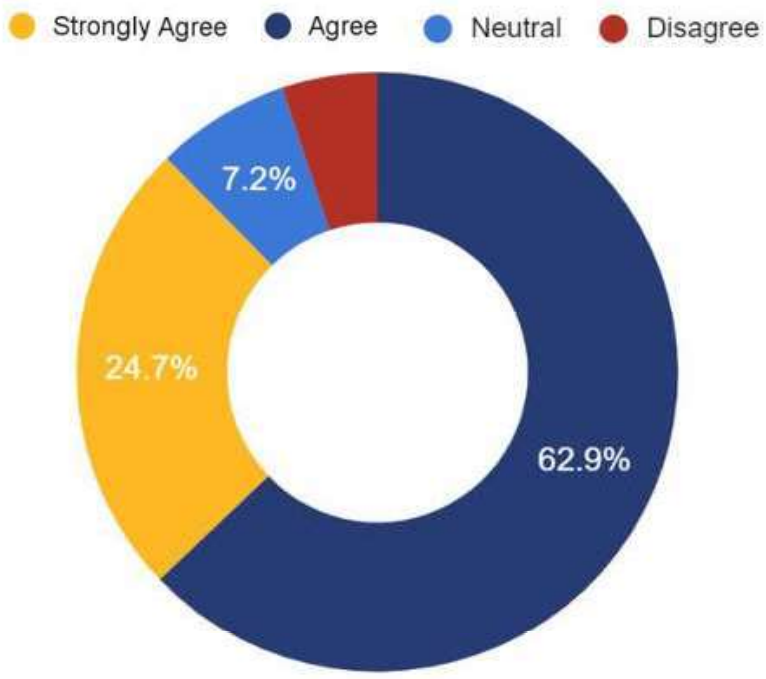
Curriculum Design

Curriculum was designed for Graduates with Honors



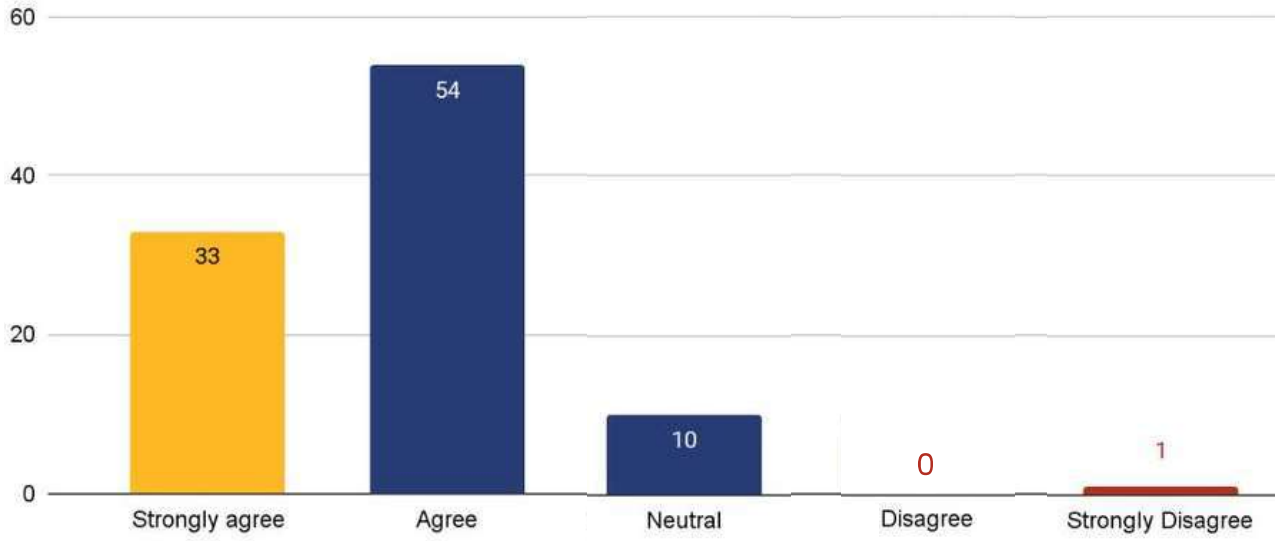
Curriculum Relevance

Curriculum was relevant to the industry requirements and job market



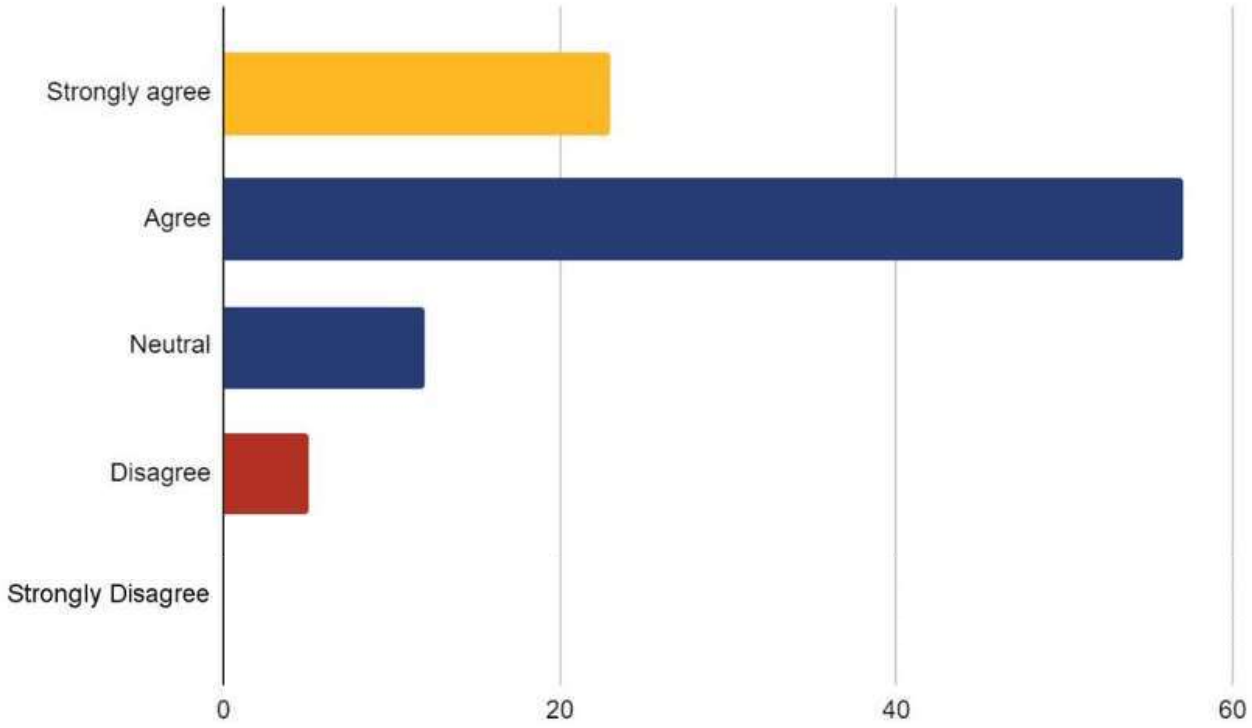
Learning Objectives

Were they clearly communicated to the trainers?



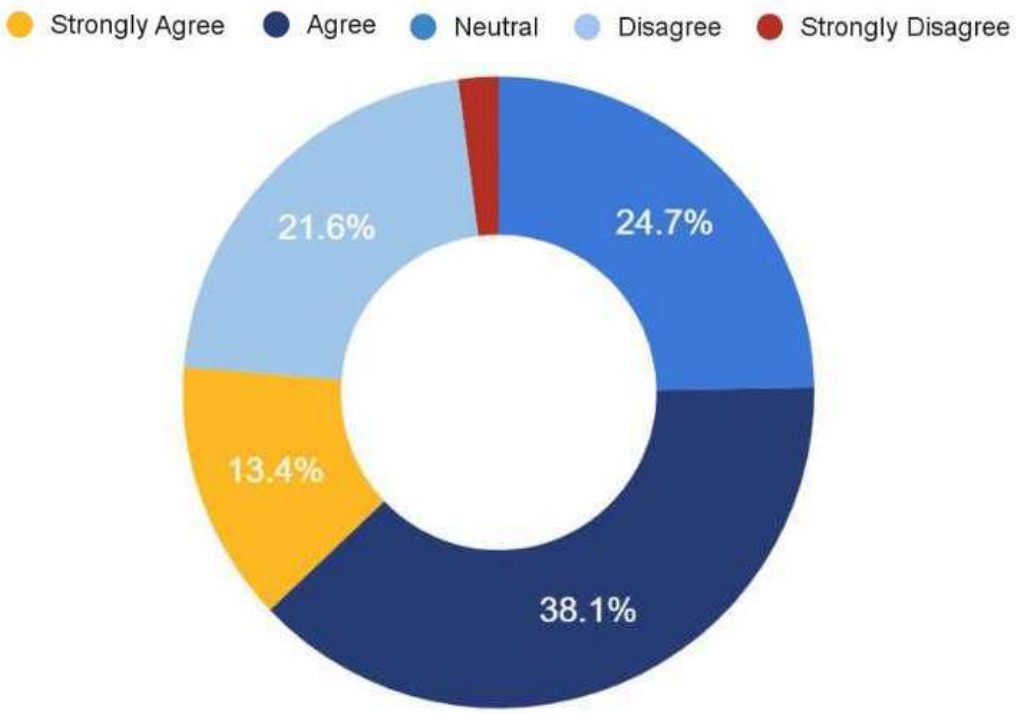
Curriculum Relevance to Subject Matter

The curriculum was relevant for a given technology track.



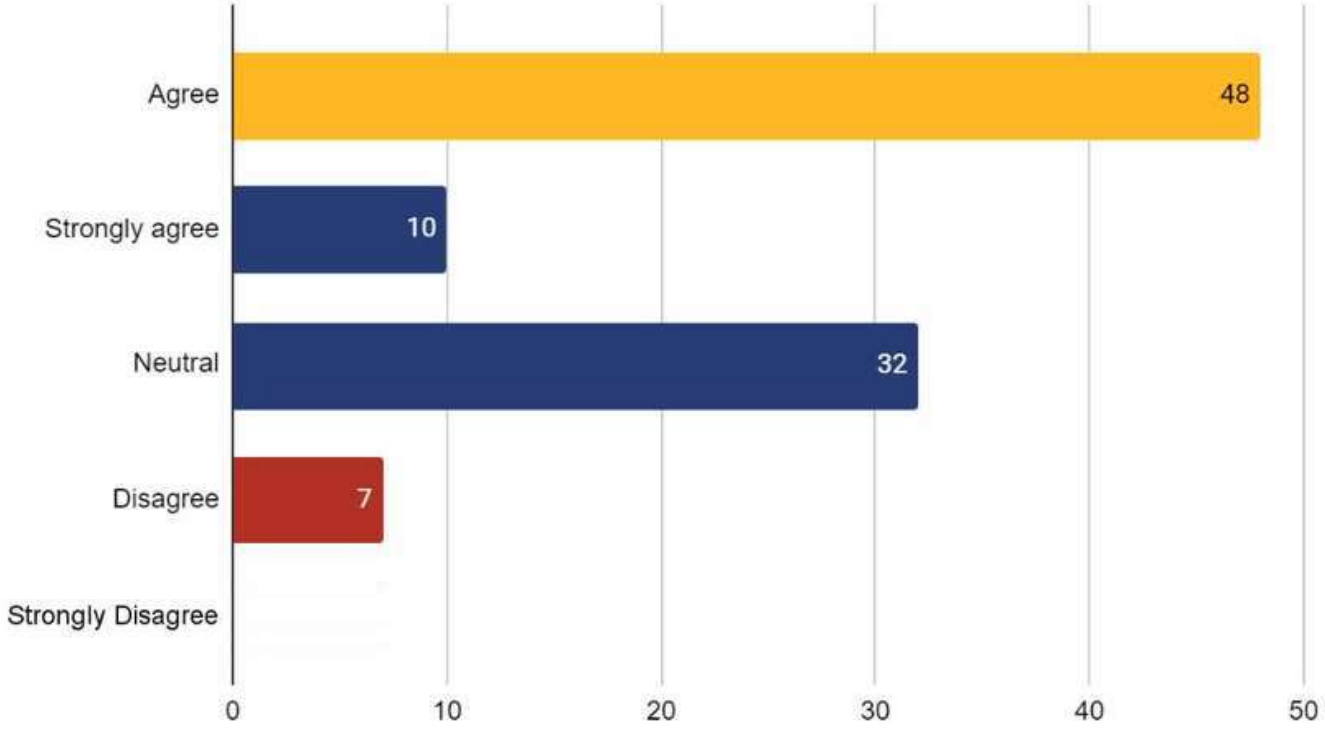
Allotted Training Hours

The allotted hours were sufficient to teach.



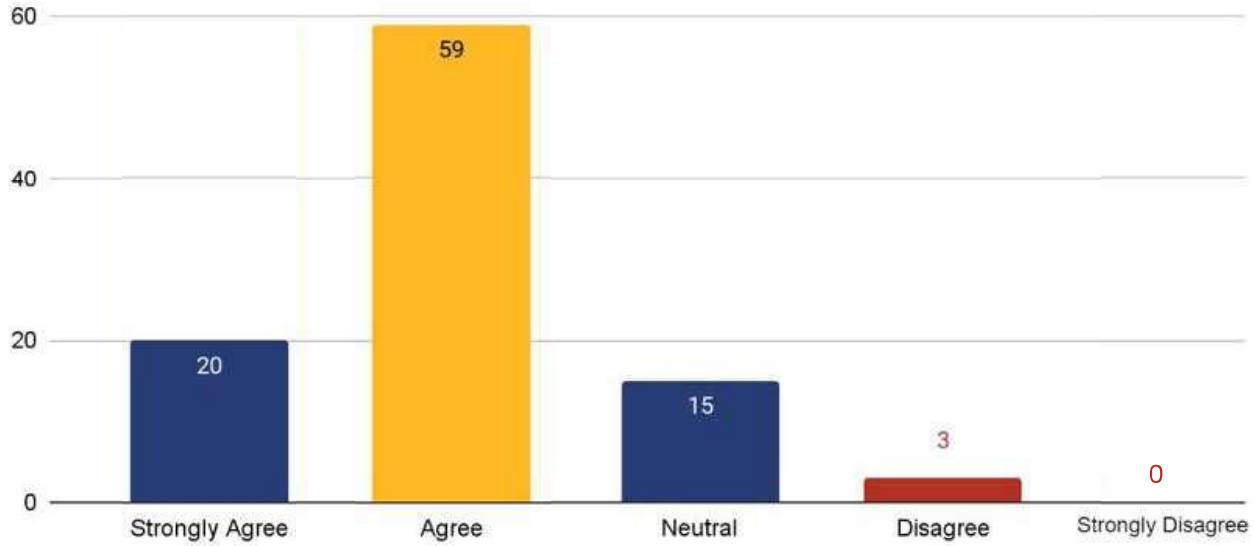
Training Materials

Where they high quality and relevant to the topic?



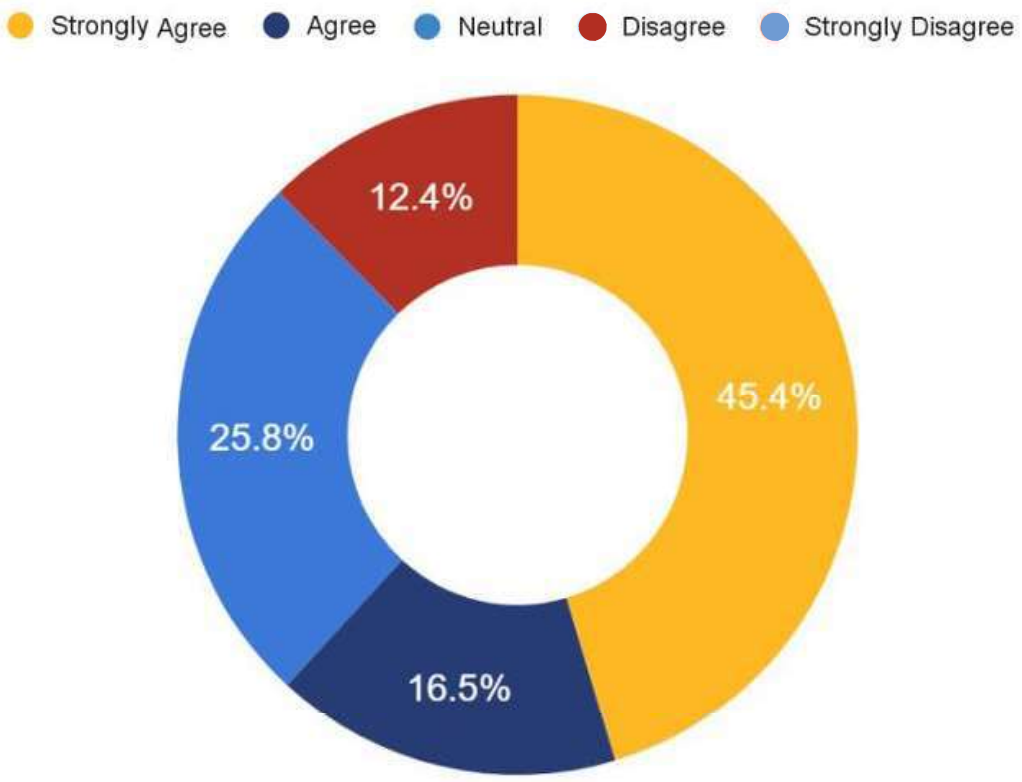
Soft Skills Curriculum

Healpful in getting students ready for interview



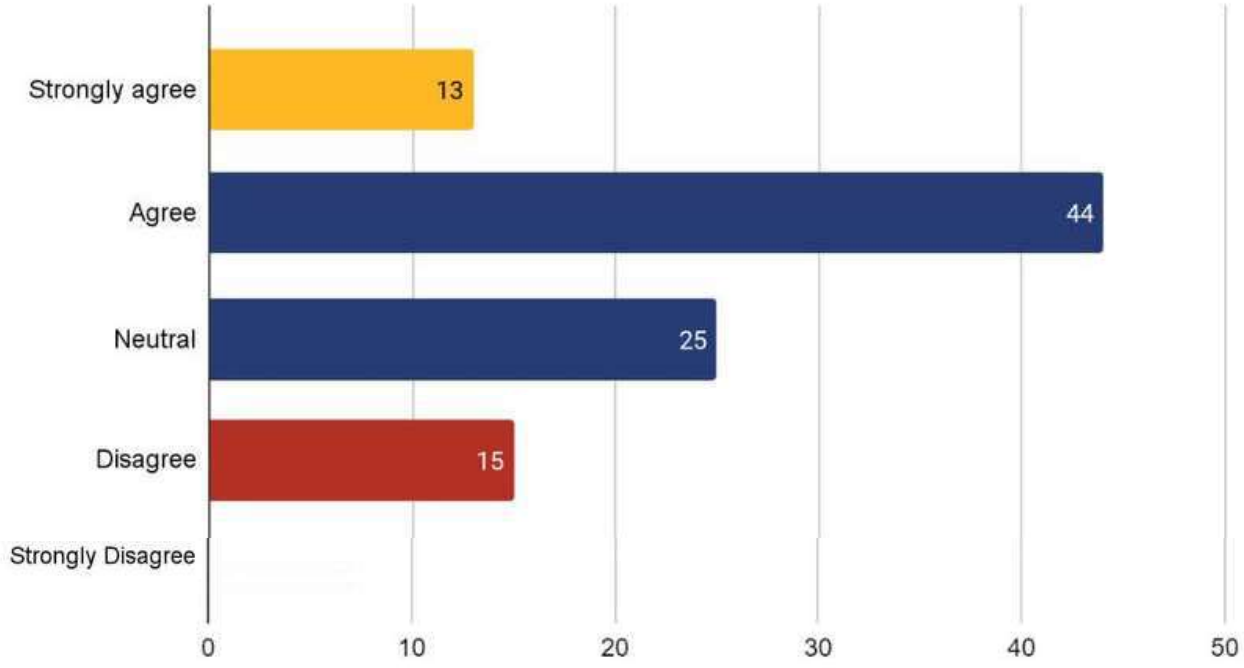
Programming Fundamentals (for non-CS Students)

Should it be more or less detailed in future bootcamps?



Programming Fundamentals

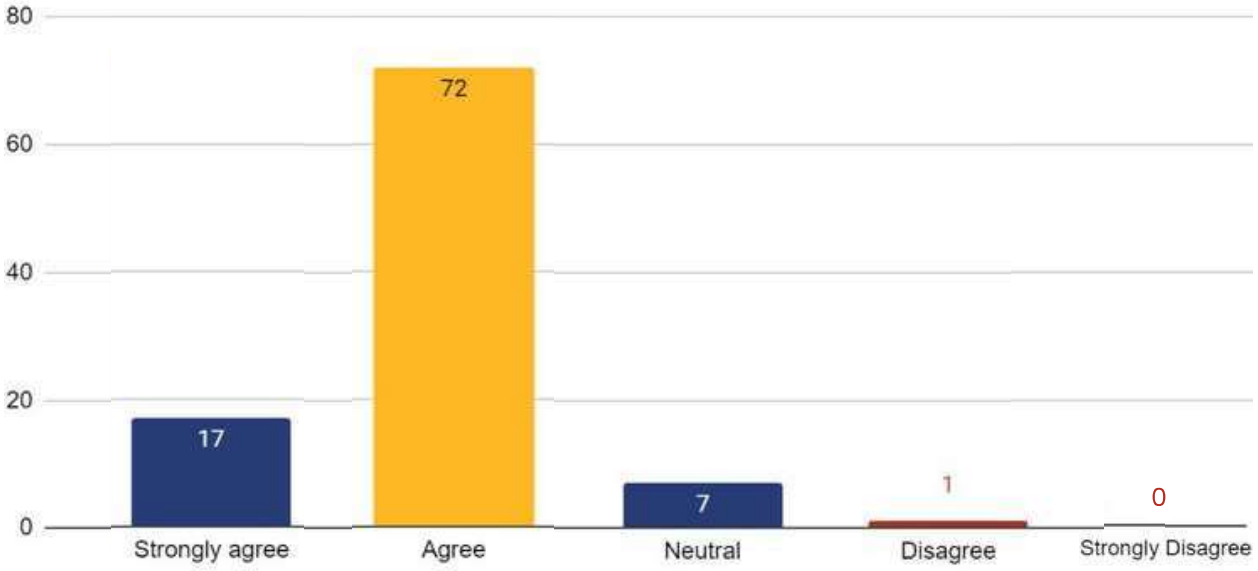
Time allotted was sufficient to cover the topics.



About the Training

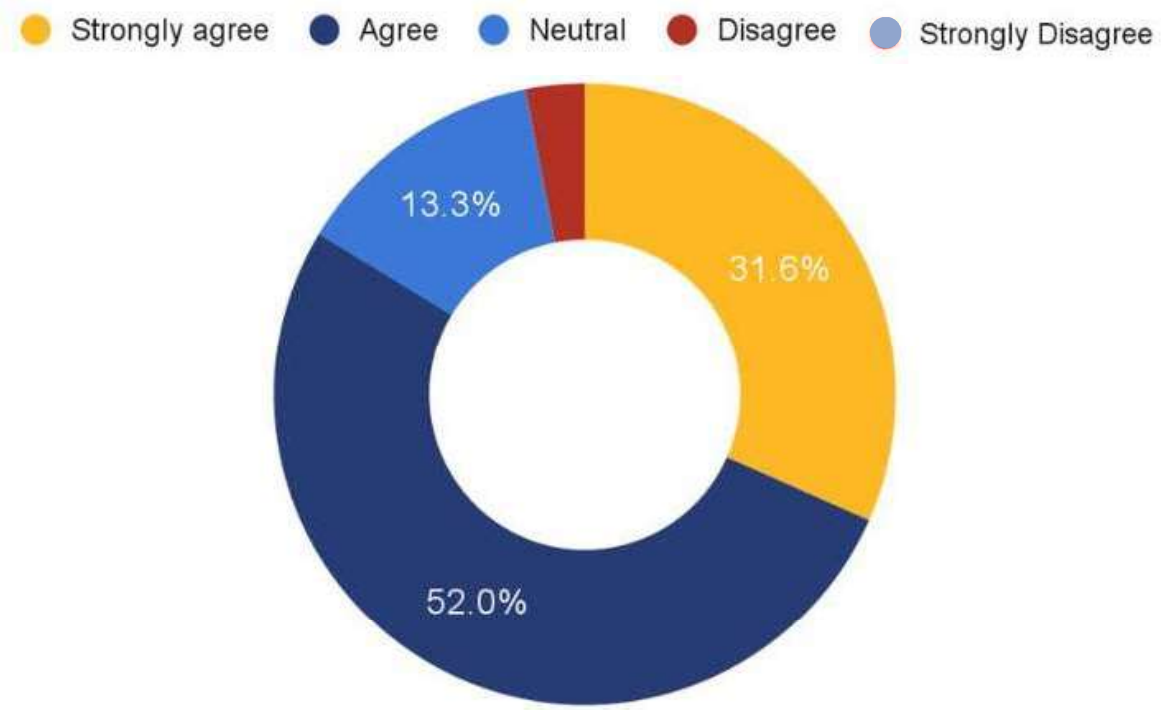
Structuring and Organizing of Training Sessions

The training sessions were well-structured and organized



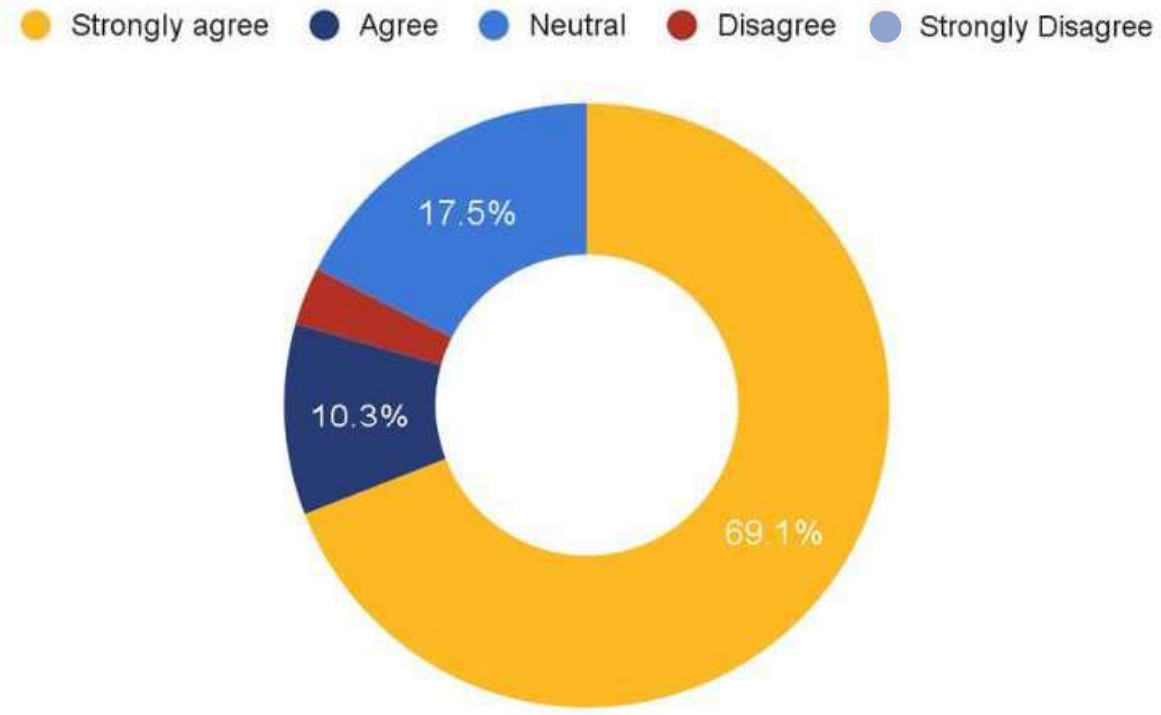
Lab and Equipment

Lab and equipment was adequate for the bootcamp



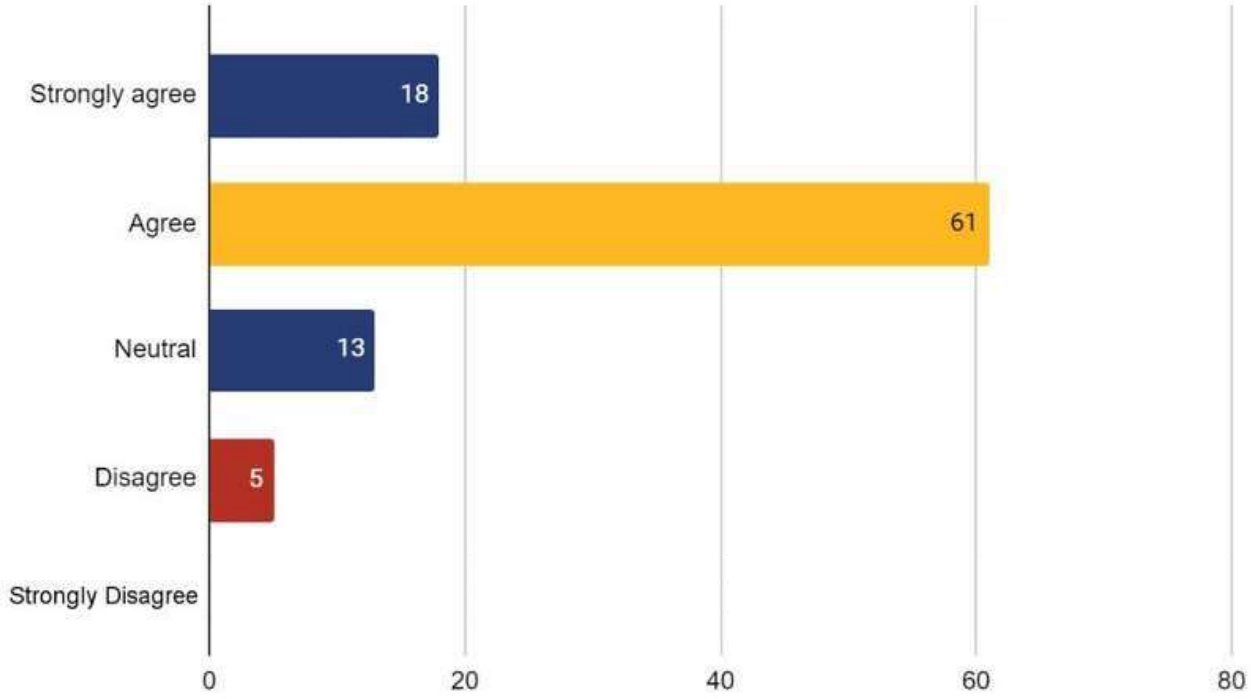
Cohort Size

It was ideal



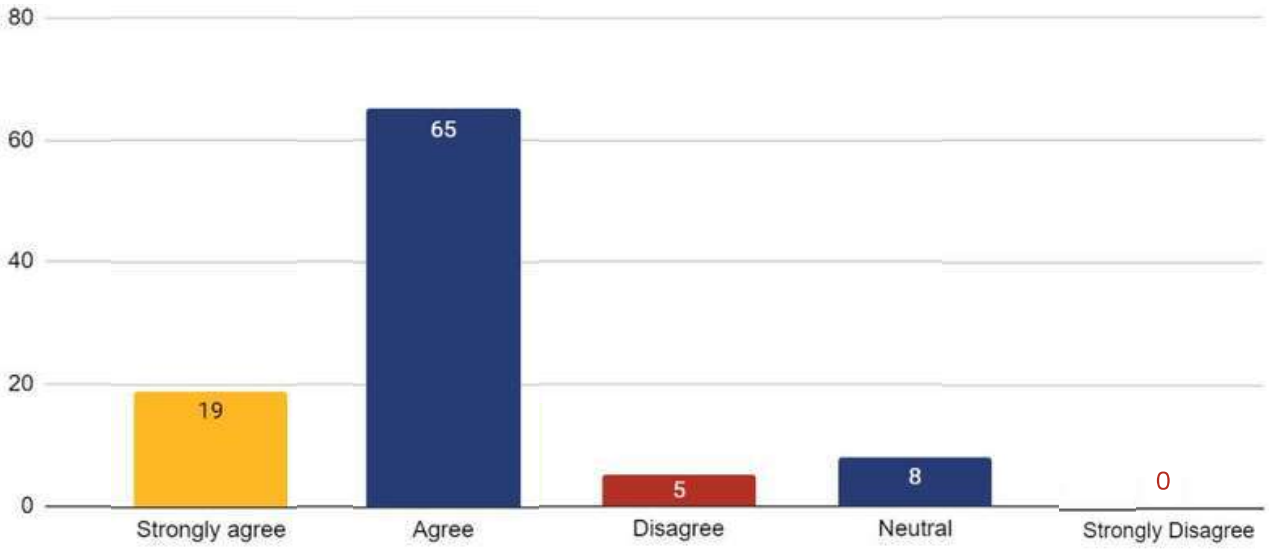
Class Scheduling

It was well planned to cover Soft Skills, Programming Fundamentals and Technical subject.



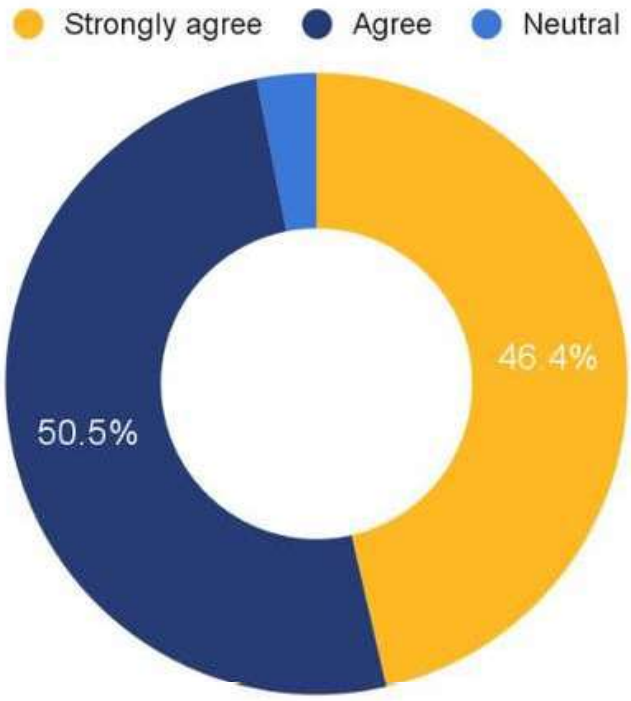
Allotted Time

It was adequate for each class.



Program Effectiveness

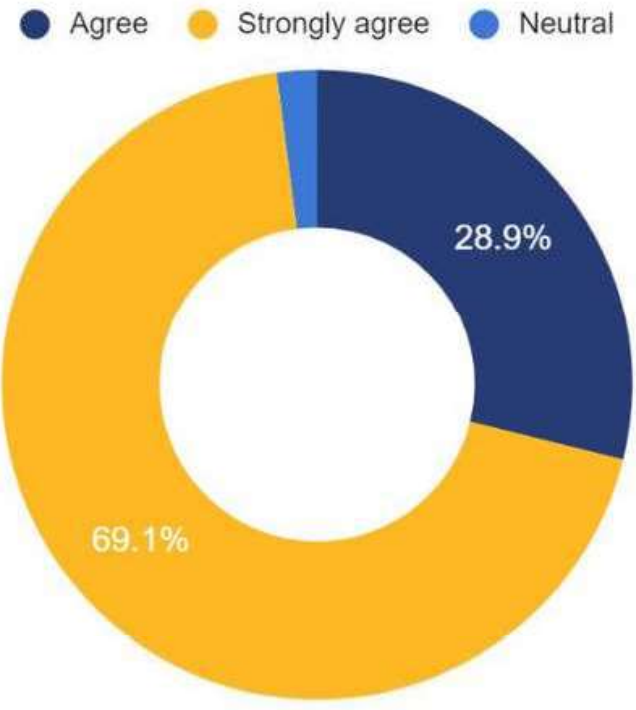
The program was effective for unemployed and underemployed students.



Program Continuity and Recommendations

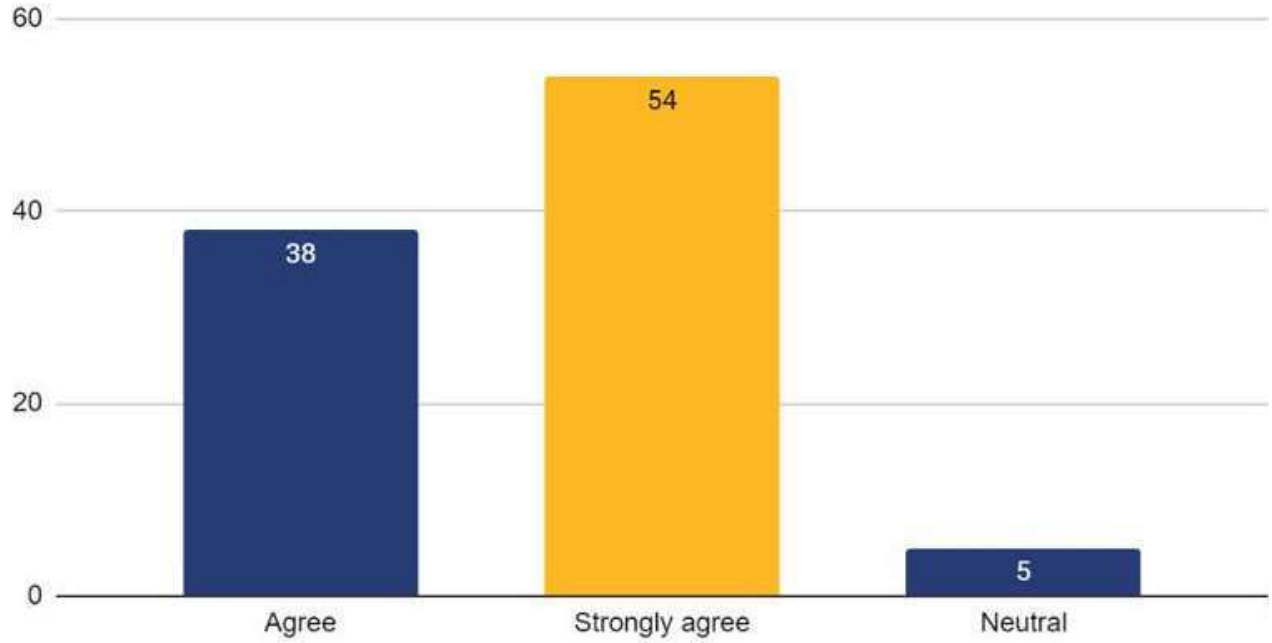
Program Continuity

The program should continue for the future.



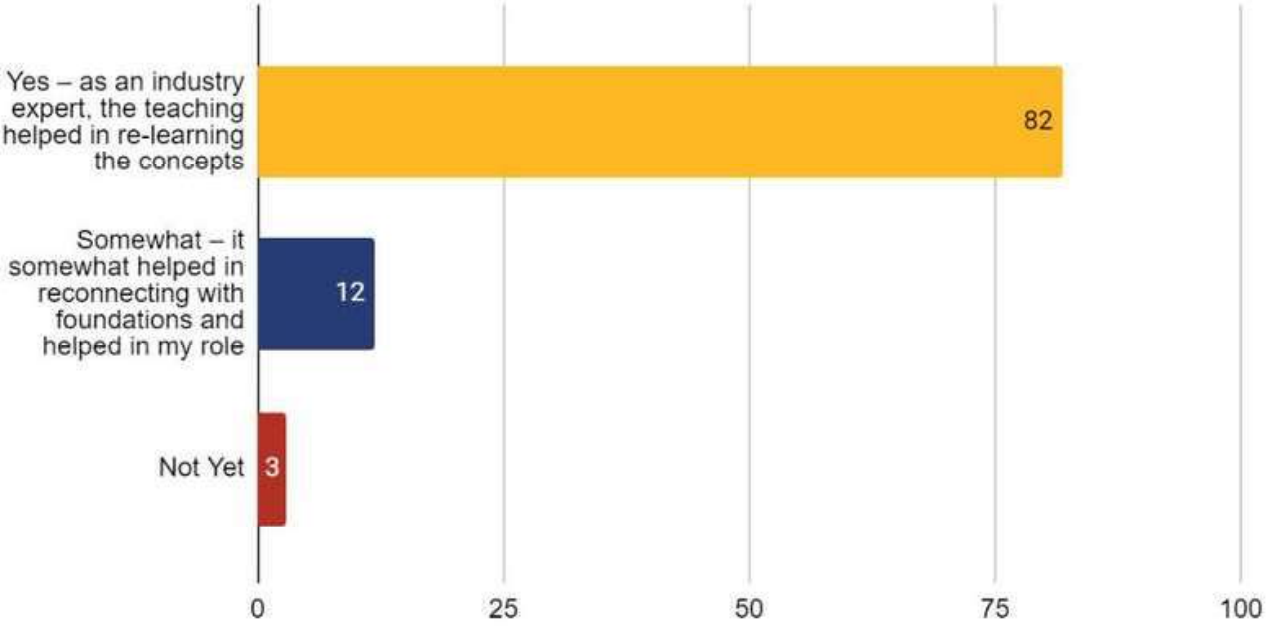
Trainer Referral

Recommend to another trainer



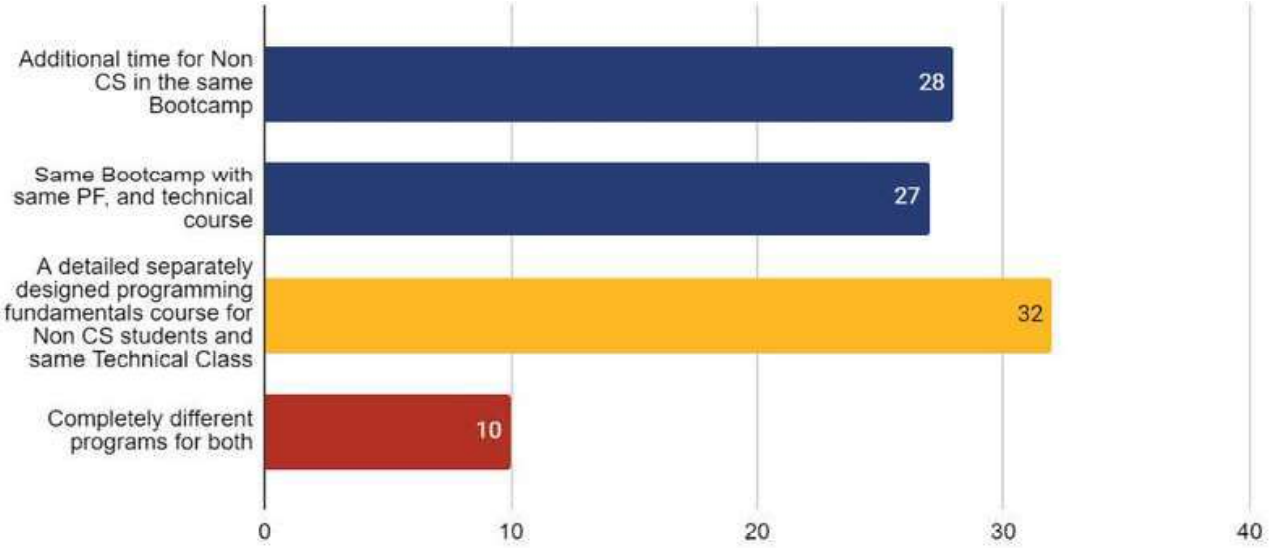
Self Growth for Trainers

It helped in my role.



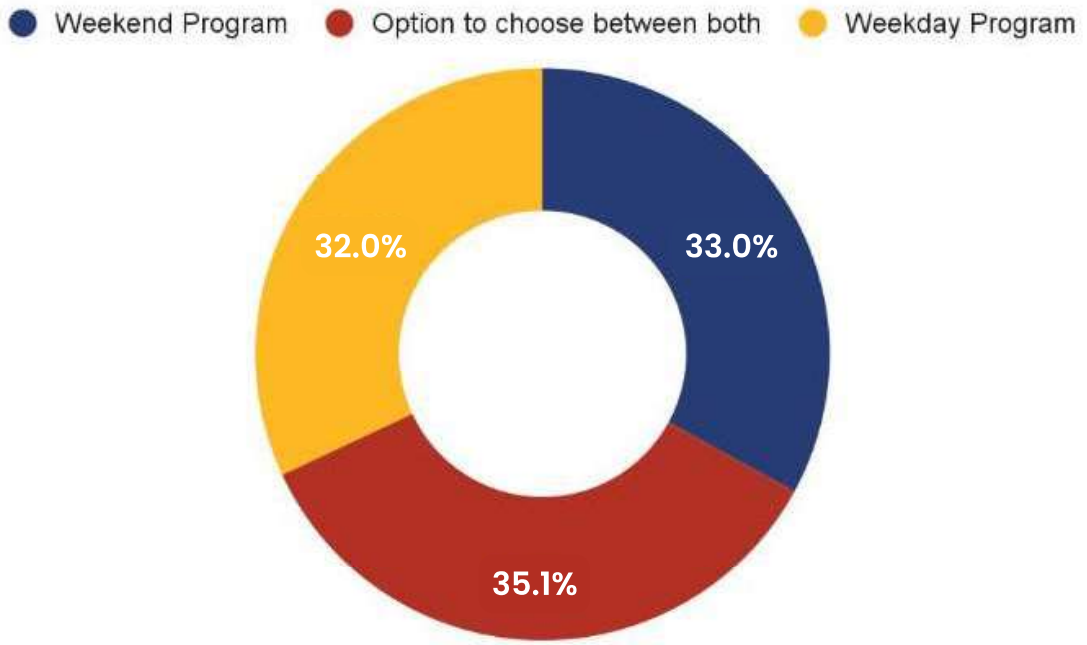
Best Option to Teach (CS and Non-CS Graduates)

Following programs seem best options for CS and Non CS graduates.



Recommendations for the Future Iterations

The program should run on the following days in the future.



9

Project Impact: Capacity of Companies

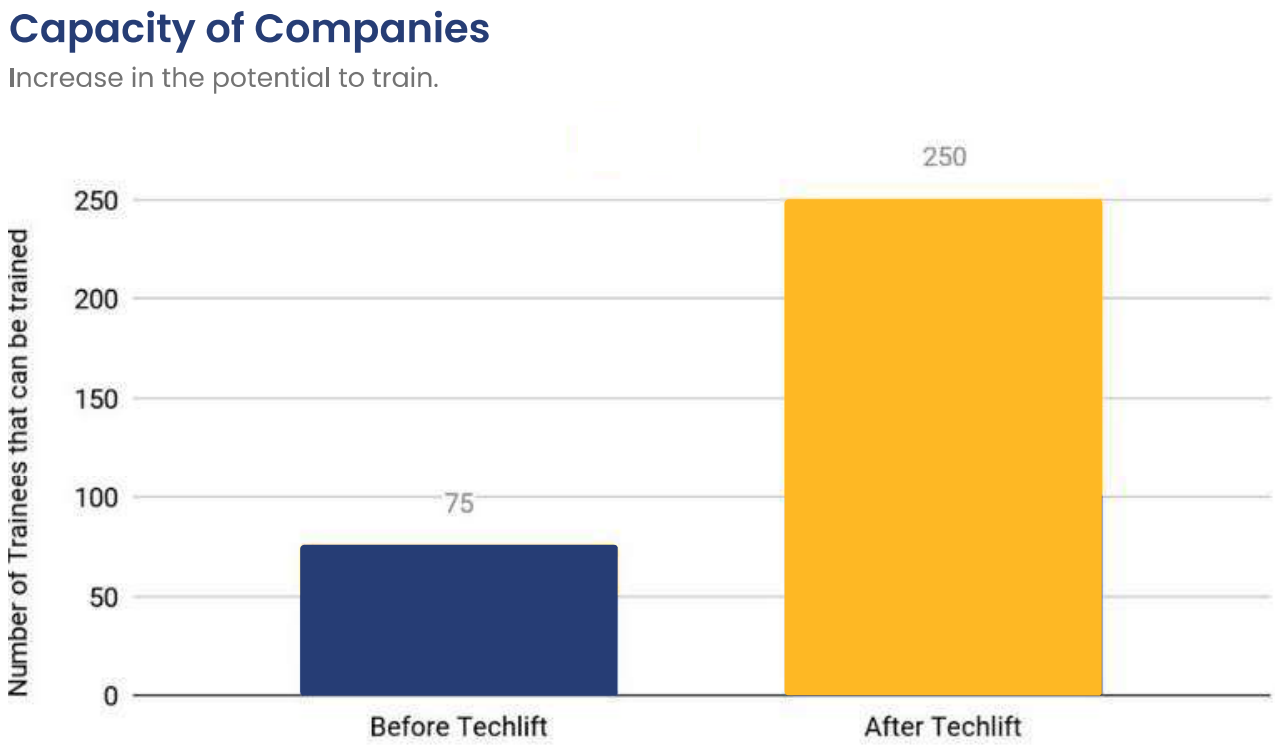
This section specifically focuses on the impact on capacity of the partner organizations.

Performance: Capacity of Companies

One of the core objectives of this program was to increase the capacity of the organizations running this program to conduct training programs in future. The Top management of the JV and Consortium Companies was asked to give their input on whether such a capacity has been created from Techlift.

Some important Insights from the survey are stated below

- The significant enrollments highlight the interest among students to transition from their scientific/business or arts related knowledge to IT skills. Again the availability of jobs is a major deciding factor.



- **Before techlift** on average companies had the capacity to train **25 to 50** candidates while afterwards the average went up to **100 and above.** This also included some companies saying that they did not have any training capacity before techlift and now they can run proper cohorts in-house.
- 99% of the respondents stated that they are satisfied with the overall training.
- Everyone agreed that the problem of shortage of resources at their own company was resolved with Techlift.
- It was unanimously agreed upon that the program has laid down foundations for best practice in the industry.

- It was stated by project managers, and validated by the JV Leader that the biggest challenges and issues in the program's execution were:
  - Expense and resource management in the face of Delayed funds, Political disruptions and contractual Documentation delays for example,

    1. University campus labs were rented for the summer when the universities were closed, only for the project to get delayed, causing loss of funds and lack of space availability

    2. In-house staff allocated to this work were at times required to move to billable work due to fixed time budgeting of resources, which also impacted delivery

  - The presence of technical and non-technical education background graduates in the same class, materially impacting retention and delivery - the technical background students wanted the class to move to the technology stack specialization portion, while the non-technical students wanted more time on the fundamentals.
  - A lack of stipend meant that those looking to improve their economic well being were incurring travel costs, and those having to stay in Karachi-Lahore-Islamabad, from other cities, were at an additional disadvantage, thus impacting the retention of students.
  - In terms of industry-readiness, in many cases the students from Tier 2/tier 3 universities from tier 2/tier 3 cities were coming in with a significant English language disadvantage, which materially impacted their ability to get hired quickly, for export-oriented work, without more time being spent to improve this area of their skills.
  - The separation of MEAN/MERN from enterprise Web Engineering, combined with students being predisposed towards MEAN/MERN, meant that many completed their Bootcamp without having some of the additional technical skills that many of the larger companies require.
    - This is a major learning point that P@SHA has incorporated into future technology stack lists, as well as for future surveys design.

10

Recommendations

This section focuses on the recommendations for future capacity building initiatives

Recommendations for Future Programs

One of the core objectives of this program was to increase the capacity of the organizations running this program to conduct training programs in future. The Top management of the JV and Consortium Companies was asked to give their input on whether such a capacity has been created from Techlift.

Program Recommendations

The Techlift Program has been received well by the industry and the youth. The program was well conceived and conceptualized by the government joining hands with P@SHA and it is evident in its impact. Human Resources shortage is only increasing with the industry's export market growth and rising business opportunities around the world. It is estimated that the IT Industry can grow to achieve almost USD 15 Billion worth of exports by the year 2028. It needs the resources to meet this target. The expected number of resources needed would be 650,000 as shown in the table. TechLift is only a start.

The next program should be launched by PSEB with a bigger target and a larger scope to not only meet the target but to create a synergy with the training institutes who can also learn to increase their capacity with industry's experience and knowledge.

Some of the program level recommendations are provided below:

- Expanding Scope to train more graduates.
- Target more cities (Tier 2).
- Create an opportunity for paid internships at the end of the program.
- Include stipend specially for students who have to travel to other cities.
- Have a separate stream for technical graduates versus non technical graduates, to allow for two versions of learning path.
- If the above two streams can be planned, the additional time (in lieu of programming fundamentals required for the non-technical graduates) can be spent on additional English language communication training for those (technical graduates) not requiring time on programming fundamentals.
- Continue the program to meet the target for 650,000 resources by the end of 2028.

Anticipated Results

P@SHA
Pakistan Software Houses Association for IT & ITES

5 YEAR PLAN

Anticipated results over years			
Year	Number of IT Professionals	Average Earning Per Year Per Person	Average Export Earning Per Year
2023	50,000	$10,000	$500,000,000
2024	84,231	$13,000	$1,095,000,000
2025	149,878	$16,000	$2,398,050,000
2026	276,407	$19,000	$5,251,729,500
2027	547,680	$21,000	$11,501,287,605
2028	1,007,513	$25,000	$25,187,819,855

25 Billion USD by Year 05

Course Recommendations

Similar to how the industry survey led by P@SHA resulted in the design of Techlift program, P@SHA should redo a similar exercise keeping in mind the demand of **combination of certain skills compared to one specialized tranche.** It has been noted that some disciplines could be taken in combination to best suit the hiring needs of the industry. P@SHA has already conducted a survey and separately this feedback has been taken into consideration.

The Skills survey could also help identify the needs for professional development and basic Programming which were both a part of this program to a certain extent. This has been noted from the feedback as well that **soft skills and other non technical skills are an essential part** of Training and development and must be considered in the next iterations as well.

The soft skills Curriculum is advised to include **English Language training** to prepare the graduates to work in a professional setting especially where they must face international clients and partners.

Eligibility Recommendations

The program had initially focused on a limited scope, targeting only three tier 1 cities. However, there was a significant demand from students who did not meet the eligibility criteria. The bootcamps received numerous requests from students who:

- Graduated with 14 years of education.
- Graduated before 2017 but couldn't secure an IT-related job.
- Were expected to graduate in a few months and could attend Weekend or Evening bootcamps.

To address these needs, it is recommended that the program considers expanding its eligibility criteria. Since the program aims to upskill graduates from both IT and non-IT backgrounds, individuals with 14 years of education, regardless of their field, should be considered. Many of these students possess the aptitude and potential to learn programming fundamentals.

Moreover, there is no need to limit the program to individuals who graduated in or after 2017. There is a substantial portion of the unemployed or underemployed population that can contribute to the industry and benefit from the program. Similarly, individuals in their final semesters should be easily onboarded and taught, as they are already in the learning stage during that time. By including these students, the program can reach a larger audience and achieve greater targets, ultimately serving the industry more effectively.

Training format Recommendations

The current program operates on an offline format, requiring 300 hours of learning. However, it has been observed that the program could have better catered to female participants if there had been an option to attend some classes online. To address this concern in the future, the program should strive to develop a **flexible hybrid model where certain less practical classes can be taken online.** It is crucial to carefully structure this model to ensure that the quality of training is not compromised.

Additionally, feedback has indicated that the program's duration, although longer than general industry training, falls slightly short of the trainers' preferences. Currently, the program includes 30 hours of soft skills training and 45 hours of programming fundamentals. To align with industry recommendations, a **400-hour course is recommended,** which should include a **separate transitional stage designed specifically for both non-CS and CS students.** Non-CS graduates would benefit from a longer and more detailed programming fundamentals course tailored to their needs.

In terms of Training Students from both Tech and Non-tech backgrounds in the same cohort, there was a significant difference in their comprehension of the subject matter. Where one group was less familiar with the programming fundamentals, the other needed significantly lesser duration to cover basic topics. It caused significant strife for trainers looking to balance the needs of those wanting more time on the fundamentals, versus those wanting to spend more time on the specialized stack portion.

Lastly, it was observed that students had to pay a cost out of their pockets to travel to receive the training, especially those working or those coming from tier 2 or tier 3 cities. **A stipend should be kept to cover for such a cost.**

TechLift

KICKSTART YOUR CAREER

| https://techlift.pk/

PAKISTAN PSEB SOFTWARE EXPORT BOARD

TECH destiNATION PAKISTAN

P@SHA PAKISTAN IT INDUSTRY ASSOCIATION

CONTOUR Software a subsidiary of Constellation Software Inc.