

# Tech talent landscape

Google for Startups

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## The shortage of technology professionals in Brazil and its economic opportunity cost

The lack of technology specialists has been one of the main concerns of startups in recent years, since the Brazilian innovation ecosystem began to develop and establish itself. We face a structural problem in education in Brazil that goes far beyond the qualification in tech graduate courses.

As such, even with the recurrent entry of thousands of professionals in the market every year, due to the current economic environment, the Google for Startups team decided to delve into this issue, in collaboration with Abstartups and Box 1824, to better understand this situation.



## Lack of access to technology

The main goal of technology is to solve problems. Although it has already been used to solve several of them, there are some structural problems that society has not yet been able to fix. One of those challenges is access to technology. When we look at the scarcity of talents in the field, we tend to pay more attention to the consequence of the problem than to its root cause.

With this study, we seek to unveil the successive gaps that over the years not only have depleted the possibility of a person becoming a professional in the field, but also the opportunity for a real transformation in education and access to technology in Brazil.

## Problem diagnosis

In a McKinsey study, 87% of all organizations worldwide expect that, within a few years, the deficit in the number of qualified tech professionals and the number of positions to be filled will have a negative impact on the market.

Massive digital transformation and the acceleration in the adoption of new technologies in organizations call for an equally massive transformation in professional roles. But people's qualifications cannot keep up with the pace of this evolution.

**By the end of this decade, more than 85 million jobs worldwide will remain vacant because there will not be qualified people to fill them.\*** In Brazil, between 2021 and 2025, 53,000 professionals will graduate from technology courses annually\*\*, while the projected demand is for 800,000 new talents\*\*\*. The result will be a deficit of 530,000 professionals over a four-year period.

Moreover, the pandemic has brought to light issues such as mental health, causing many people to reflect on their relationship with work. Survey "The next great disruption is hybrid work" estimates that, in 2021, over 40% of all people worldwide considered quitting their jobs. Work relationships are governed by new codes and, in addition to monetary value, other principles have become essential to professionals, including

concern for the sustainability of the environment and society.

For startups, one of the greatest challenges is to establish themselves while competing for talent with large national and international companies. The main result is their low ability attracting and retaining professionals who could help leverage their businesses.

### Sources::

\* Future of work: The Global Talent Crunch, Spring 2018 by Korn Ferry

\*\* Demanda de Talentos em TIC e Estratégia (Demand for ICT and Strategy Talent), Brasscom, 2021

\*\*\* Bridging the Skills Gap in the Future Workforce - Accenture

## The main challenges in the market

Gaining in-depth understanding of the main issues surrounding the talent gap in technology is essential to working towards solving the pain points the market experiences. Objectively speaking, these pain points can be split into three groups:

- Number of qualified professionals
  - There evidently is a significant lack of professionals to meet the growing demand, in addition to a lack of qualification in professionals' profiles.
  - Consequently, one of the main effects of this talent gap is a delay in business growth, due to a limitation of people and the need to prioritize tasks.
- Seniority of available professionals
  - The need for a fully-fledged professional significantly increases the time until the first income.
  - The high probability of that professional's being recruited by other companies, both domestically and internationally, increases the risk for companies to invest in their employees' long-term development and training.
- Homogeneous market
  - Active professionals are highly concentrated in Brazil's Southeast and belong to groups with low diversity.
  - Underrepresented groups face the relevant lack of incentives, in addition to a number of elements that discourage and distance them from the technology market. When it comes to the moment technology is initially accessed, we have an environment that leaves out more than half the population.

Also, although the entire technology market suffers from these points, the three areas that represent the biggest talent gaps in the world are:



The sector lacks professionals in general, but this worsens when we look at some specific roles, mainly those requiring some sort of specialization. The main jobs with increased demand in the world are:

- 1 Data analysts and scientists
- 2 A.I. and Machine Learning experts
- 3 Big Data experts

By not addressing those pain points and challenges, we miss out on a relevant opportunity:



Source: Bridging the Skills Gap in the Future Workforce - Accenture

## Talent flight

Adding to the complexity of the equation, the lack of basic factors for the proper development of tech professionals in Brazil is the first major reason for high occupational dropout rates. **There is a lack of structure, such as access to quality computers and to internet connection, socio-economic conditions, representation, and close references of professionals working in the area.**

Technology is not yet as present as a career option, nor is it aspirational. Proof to that is the fact **71% of all startups agree there are very few examples of successful technology professionals in schools.**



Among all things that seem to be missing to address these issues, some points are worth emphasizing:

The pains surrounding this market	Represent a challenge of...
Lack of structure	Access to essential resources
Lack of aspiration and belief	Perception of the potential in a tech career
Lack of education, from the ground up	Adapting the teaching methodology from the beginning of school life to reflect the current needs
Lack of familiarity/closeness	Understanding technology can be an ally in education, not an enemy
Lack of more democratized access	Making technology accessible to everyone, including underrepresented groups
Lack of professionalization and professional clarity	Better mapping professional paths within the tech market, and ensuring the information reaches professionals
Lack of a realistic interpretation of possible career paths	Helping future talents to correctly interpret the complexity of the career
Lack of synergies	Better connecting societal spheres (social, academic, corporate, governmental), and aligning expectations
Lack of direction and security	Ensuring these paths are not only created, but also communicated to potential talents (present and future)
Lack of entry-level opportunities	Better aligning companies' expectations with regard to entry-level professionals in their early experiences
Lack of alignment of expectations	Aligning expectations between companies and professionals regarding academic training
Lack of nurturing, developing and training in the corporate environment	Working better on the development of the professionals companies have already hired
Lack of short- to long-term professionals	Sharing and meeting hired professionals' short, medium, and long-term expectations, seeking to address the present pressing issues and future uncertainties
Lack of a new value perception	Learning more about the market and adapting fast to new needs and demands, not only to develop a solution but also to ensure professionals quality and safety.



## Startups face even greater obstacles

The situation is even more critical for startups in this competition for talent. The context of scarcity has created an equation that does not add up. Despite great drivers of innovation in the market, startups typically have leaner structures, meaning they have less hiring power and need more experienced, seasoned, senior professionals who can hit the ground running – in other words, precisely the most wanted and valuable professionals for the market as a whole.

Whether domestically or internationally, startups typically struggle to compete with more established companies in terms of benefits and salaries. Additionally, they face greater difficulty

in building employer brands and offering structures, career plans, development, security, and other important supporting pillars for the majority of tech professionals. That happens because, in a market where competition for talent is so fierce, even those who are hired tend not to stay in the same job long enough for such long-term investment in development to become viable.

Conversely, startups continue demanding many credentials, certifications, and requirements that ultimately confirm and reinforce certain standards that hinder the flexibilization of the market – actually rendering it even stiffer.



# The situation is challenging, but there are possible solutions

Much is said about technology. The goal now is to make access to it a commodity. It is impossible to solve the problem of talent shortage without opening up the playing field to more people, or helping them develop in the profession.

These challenges can translate into various gaps in the sector. In addition to correctly identifying them, it is necessary to find ways to solve them. Through this research, it was possible to identify some of the aspects startups pointed out as the most urgent:

## 1. Presence gap

To ensure more people, especially from diverse backgrounds, are part of the industry in a qualified way, it is necessary to identify and address the following issues:

Presence gap	
Lack of	Can be solved through
Infrastructure	Access to hardware
Aspiration and belief	Fostering a cultural industry
References and role models	Promotion of industry personalities as references, in technology news agendas

### Some of the ideas presented in the report to achieve this:

- **Centralize and increase access:** creation of tech spaces in cities' outskirts, as well as facilitating the conditions through partnerships with companies for hardware distribution, or actions such as events that give hardware out as prizes.
- **Maximize existing projects through technology:** providing subsidies and mentoring for projects located in cities' outskirts to incorporate technologies into their routine.
- **Bridge the gap:** materialize work practices through visits by children and adolescents to companies, colleges, and other tech centers, and vice-versa.
- **Permeate the cultural production:** raise awareness of technology-related careers through major media outlets that reach the population while forging emotional bonds
- **Technology as a tool for social change:** promotion of hackathons focused on solving practical problems for at-risk individuals, through their participation and active listening, using technology.

## 2. Education Gap

Regarding the challenges in Brazilian education, it is possible to address them jointly, understanding that medium- and long-term actions are essential.

Education Gap	
Lack of	Can be solved through
Closeness	Search for new perspectives for students and education in itself
Education, from the ground up	Increase efforts related to education throughout the country

### Some of the ideas presented in the report to achieve this:

- **Basis for change:** build a coordination front to support a reform in the educational base, formed by stakeholders from the political and market spheres.
- **Support to schools:** investment in initiatives supporting public schools in cities' outskirts; also offer classes on technological knowledge and soft skills.
- **Boosting self-esteem:** psycho-pedagogical support to strengthen the confidence and self-sufficiency toward building their own future.
- **Investing in teacher training:** create ways to update teacher training so that they can prepare classes that involve technology and its principles.
- **Strengthening the relationship with multidisciplinary students:** partnership with public and private colleges focused on collaboration in research, on the shared use of information, and on the encouragement of researcher exchange programs.

## 3. Professionalization Gap

More democratized access to the sector and solid educational foundations bring greater clarity to the professionalization of individuals for the sector, providing a more realistic interpretation of possible career paths.

Professionalization gap	
Lack of	Can be solved through
More democratized access	Democratization of access to knowledge
Professionalization and professional clarity	Development of strategies that will steer learning and potential paths
Realistic interpretation of possible career paths	Alignment between corporate requirements and the reality of the market and professionals

**Some of the ideas presented in the report to achieve this:**

- **Access bootcamps:** offer free or company-funded Bootcamps and courses. Bootcamps as a recruitment process.
- **Job placement support:** investment in reskilling to help people requalify in the tech field.
- **Integrated career services:** provide consultancy services, facilitation, and career support services for those who want to enter or develop digital activities.
- **Companies + education:** promote better understanding of scarce skills and the ways to increase the supply of professionals.
- **Integrated support for underrepresented groups:** encouragement to underrepresented profiles who can benefit from a career in technology through free courses.
- **Certification:** establish a sort of market badge or associations to courses that are more aligned to the current requirements.

#### 4. Entry gap

It is also necessary to find ways to promote more entry-level opportunities, direction, and security, to become part of the industry.

Entry Gap	
Lack of	Can be solved through
Synergies and alignment of expectations	Development of better career hierarchy and a unified and adapted screening process
Direction and security	Creation of incentives for skills development
Entry opportunities	Simplifying the process to begin a career

**Some of the ideas presented in the report to achieve this:**

- **Invest in the foundation:** creation of positions for youths (young apprentices) in high school.
- **Increase access to underrepresented groups:** scholarships for underrepresented groups not yet in the job market, including individuals still in high school.
- **First-job incentive:** government- or ecosystem-sponsored grant to support the cost of youths between graduation and their first job.
- **New certifications:** creation of industry qualification stamps.
- **Flexibility:** matching working conditions with what is offered abroad.
- **Emphasis on impact:** attract based on the proposed challenges and potential impact.

## 5. Work gap

Once a professional enters the tech industry, it is necessary that the corporate environment is welcoming and open to new value perceptions.

Work Gap	
Lack of	Can be solved through
New value perception	Incentives linked to performance and growth potential
Short- to long-term professionals	Transformation of the traditional hiring model, adapting it to the unique environment of the tech industry
Welcoming, developing, and training in the corporate environment	Country investment in science and technology

### Some of the ideas presented in the report to achieve this:

- **Invert the search logic:** increase the intake of junior and mid-level professionals to boost the number of seniors in the future.
- **Develop welcoming practices:** encourage intake and nurturing of different profiles in companies through guidelines or platforms to share best practices.
- **Empowerment:** offer development paths to teams, especially for early stage professionals and individuals from underrepresented groups.
- **Public investment:** tax credits for employee training within the technology development program for Industry 4.0.
- **Rescuing experts:** financial support for scientists and experts to remain in Brazil, doing research and other scientific work.
- **Stock options:** long-term incentive plan to offer employees combinations of stocks and salaries.



## The private sector's role

This survey identified the main problems leading to the lack of tech talent in Brazil. Changing this situation calls for the joint involvement of all spheres of society, including the public and private sectors.

Google understands it is essential to be set within a technological growth scenario encompassing the country as a whole. With that in mind, in 2016, Google for Startups arrived in Brazil with the

objective of helping to boost the technology and innovation ecosystem in the country. Since then, it has mentored and accelerated more than 300 startups.

Furthermore, in terms of education and tech development, Google has several other initiatives in place that seek to ensure access, inclusion, and training alternatives for people interested in the Brazilian tech market:

- [Grow with Google](#)

The program offers free content and tools for the improvement of skills, careers, and businesses. In total, millions of Brazilians have been trained in essential digital skills for the job market and for business.

- [Professional Certificates](#)

Flexible online training programs designed to put everyone on the fast track to jobs in high-growth fields. Specializations include IT Support, Data Analysis, Project Management, UX Design, and others.

- [Capacita+](#)

Google Cloud's online learning hub that upholds Google's commitment to offering technology training and knowledge to more people, helping to increase the workforce in the country.

- **Other Google Cloud education projects:**

- **Google Cloud Job Fair:** fairs held to connect students to job opportunities in the cloud computing area;
- **SoulCode Academy:** partnership that offers free courses focused on Cloud and aims to train students to develop a career in cloud computing;
- **Salvador Tech Platform:** a public policy in the city of Salvador, where Google Cloud helps to promote digital and social inclusion, through four online courses, bringing basic concepts about cloud, Big Data, and Machine Learning.



## The future

There is still a lot to be done. Today's children are born in a fully technological context, but that does not mean they will consider technology as a career possibility or that they learn about it in a professionalizing way. Decreasing the talent gap

requires the joint involvement of the public and private sectors, so it is possible to impact all economically-active age groups and social classes in the country.

