



## PROFESSIONAL SKILLS OF THE FUTURE FOR STARTUPS IN SÃO PAULO

*Competências Profissionais do Futuro para Startups em São Paulo*

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### ABSTRACT

The accelerated technological advancement has rapidly changed business models and the way companies think. In less than a century, we went through three industrial revolutions, which completely changed the panorama of the competences expected from an employee. In addition, the horizontal management models practiced by startups and their formula for accelerated growth meant that the skills from the beginning of the last century were no longer a reference today. The managers' state that the jobs and companies of the future have not yet been created, working with the perspective of uncertainty and accelerated changes. These factors explain the need to understand what will be necessary for a worker to be considered qualified in the future. With that been said, the question of this research is "What are the important skills for startups to meet their requirements in 2025?" For that, we have chosen for a qualitative and exploratory research, given the lack of a theoretical framework on the theme. The result indicates that the skills demanded by startups are related to human skills, which are made up of actions such as initiative, creativity, solving complex problems, innovation and active learning.

**Keywords:** Competence; Startups; Entrepreneurship.

**ACEITO EM:** 24/08/2020

**PUBLICADO:** 30/05/2021



## COMPETÊNCIAS PROFISSIONAIS DO FUTURO PARA STARTUPS EM SÃO PAULO

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### RESUMO

O avanço tecnológico acelerado mudou rapidamente os modelos de negócios e a maneira como as empresas pensam. Em menos de um século, passamos por três revoluções industriais, que mudaram completamente o panorama das competências esperadas de um funcionário. Além disso, os modelos horizontais de gestão praticados pelos startups e sua fórmula de crescimento acelerado fizeram com que as competências do início do século passado não fossem mais referência hoje. Os gestores afirmam que os empregos e as empresas do futuro ainda não foram criados, trabalhando na perspectiva de incertezas e mudanças aceleradas. Esses fatores explicam a necessidade de entender o que será necessário para que um trabalhador seja considerado qualificado no futuro. Dito isso, a questão desta pesquisa é “Quais são as competências importantes para que os startups atendam às suas necessidades em 2025?”. Para tanto, optou-se por uma pesquisa qualitativa e exploratória, dada a falta de um referencial teórico sobre o tema. O resultado indica que as competências exigidas pelos startups estão relacionadas às competências humanas, que são compostas por ações como iniciativa, criatividade, resolução de problemas complexos, inovação e aprendizagem ativa.

**Palavras-chave:** Competência; Iniciantes; Empreendedorismo.

## INTRODUCTION

The work environment has been changing due to new technologies, forms of production, services and business models. These changes require companies to acquire new skills to remain competitive. This phenomenon has been observed during the last four Industrial Revolutions. In the First Revolution, it was necessary for workers to move from artisanal work to more technical functions in large factories (Schwab, 2016; Oliveira, 2004). In the second one, due to the advance of electric energy and the combustion engine, the assembly line and mass production began, and the work became more technical and repetitive (Oliveira, 2004). With the advancement of computing, the third Revolution went through phases such as production automation, personal computing, the Internet and the implementation of new organizational models, which led employees to develop skills such as greater proactivity and creativity (Schwab, 2016; Silva, Silva, & Gomes, 2002). The Fourth Industrial Revolution was marked by the digitalization, automating processes and the usage of artificial intelligence, arising in the needs of multidisciplinary professionals and the ability to interact with groups of people (Schwab, 2016).

Thus, it is noticed that industrial revolutions are linked to technological advances, which change the way of production, organization, skills and how the market flows. With the ongoing technological advances, changes in the economic scenario and competitiveness in the market, companies started to search for ways to stand out from others, either through lower costs, new business models or new products/services (Mintzberg & Quinn, 2001). As a result of this high competitiveness and search to stand out in the market, Startups emerged. These are defined as young companies that, through innovation and constant research for the ideal business model, aim to become scalable quickly, that is, grow steadily, operating in environments of extreme uncertainty and, in most cases, with small capital (Andrade, Granata, & Silva, 2017; Ries 2012).

It is observed that the skills have changed and continue to change according to the needs of the market and the evolution of technologies. These needs, in addition to the high competitiveness, establish the constant search for resources to stand out among the competitors. This reality is even more accentuated for startups, once its main characteristics are the search for different market through innovation, technology and constant change of the business structure in an accelerated way, using qualified labor to meet its profile. With this scenario, the objective of the research was to understand the reality of the labor market from startups, to verify what their characteristics and challenges are, to identify what the skills required to work in this type of company are and what the profile of new talents to meet future requirements is. To this end, the following research question was elaborated: “What are the skills that startups understand that will be important to meet their requirements in 2025?”

## 1 Theoretical Review

### 1.1 Concepts and definitions of Startups

According to Andrade, Granata and Silva (2017), the term startup started to be used in the period from 1996 to 2001, in the so-called “internet of bubble” or “bubble companies dot com”, which was characterized by a high variation in the stock market motivated by companies related to technology and communication. “Bubble” refers to the fact that bubbles have a high capacity for growth, as well as the high probability of popping. The term Startup is used to designate newly created profitable companies with innovative business models in any area or industry (Ries, 2012). The Brazilian Micro and Small Business Support Service (SEBRAE) (2012), on the other hand, believes that startups are companies with a high degree of influence in the development of technological capabilities and economic advances, in search of new business models. Despite the various interpretations, the concepts start from an idea related to a young company in the market, with a technological and innovative vision, operating in environments of extreme uncertainty.

Nowadays, the startup concept is recognized worldwide as having great importance in the market when it comes to innovation. One of the main points that make startups so efficient and innovative is the freedom they have to carry out their projects, without having to go through long bureaucratic processes. In addition, they usually reassess the process several times, until they find a model that presents the best possible results (Blank and Dorf, 2014).

## 1.2 Challenges faced by startups

Despite the characteristics of scaled up results, or ever growing results, startups have limited time and financial resources (Giardino, Wang, & Abrahamsson, 2014). According to Ries (2012), they are in an environment of uncertainty, they are new and still do not know who their customers are, being very difficult to have an accurate planning without adaptations in the future to be developed.

Another major challenge for startups, related to investors, is the lack of guarantees. Dornelas (2008) places as important barriers related to investments by startups: the economic situation in Brazil, an unstable market and high tax rates. According to SEBRAE (2017), the startup environment has four major challenges: an unstable market, influencing both in processes and capital collection; generating value, which is the ability to transform time and resources spent into money; being able to deliver a product on a large scale; and be scalable, quickly increasing revenue while costs increase more slowly. Nogueira and Oliveira (2015) point out three aspects that influence the mortality of startups in Brazil: the number of partners, the volume of capital invested and their place of installation. According to AgTech Startups Brasil (2019), 80% of startups consider raising capital for the development of their businesses as the biggest challenge. In this context, it is clear that the main challenges for startups are limited time and resources (Giardino, Wang and Abrahamsson, 2014), lack of business maturity (Ries, 2012), investment funds (Dornelas, 2008; AgTech Startups Brasil, 2019), an environment of uncertainty (Ries, 2012, Dornelas, 2008, SEBRAE, 2017), value generation; becoming scalable and financially profitable (SEBRAE, 2017).

Despite the challenges faced by startups, according to SEBRAE (2012), they are essential for the economy of Brazil, as they require little initial capital and are linked to innovation. For Ries (2012), there is an increase in technology-based companies and in the field of Information and Communication Technology (ICT). Consequently, it increases the number of Startups in the market.

## 1.3 Definition of Skills' Concepts

According to Fleury and Fleury (2001), the definition of competence is attributed to the ability or aptitude to perform an action, which is not limited to the theoretical and empirical knowledge attributed to the tasks. For Dutra (2004) there are two types of competences, general and specific. General competences are “common” characteristics, attributed to any employee of the company. In addition, specific ones are defined for each sector of the company.

## 1.4 Evolution of Professional Skills Linked to Industrial Revolutions

To address the professional skills of the future, it is essential to detail the evolution of the work models inserted in each Industrial Revolution. According to Cavalcante and Silva (2011) the First Industrial Revolution began to happen in the textile industry and was the great precursor of capitalism. With the transition from the artisanal production system to the factory, an alienation process of the professional started to happen, because even the artisans who wanted to remain with their manufactures could not compete with the industry, due to the ability to produce on a large scale and at lower prices, forcing them to be subordinated to industry. The Second Industrial Revolution, like the first, was marked by technical innovations, with the discovery of electricity, the transformation of iron into steel, the development in communication and chemical industry, the new means of transportation and organizational models (Fordism and Taylorism). These changes brought social, political and cultural implications, leading to insecurities and changes in the power society relations (Oliveira, 2004). The Third Industrial Revolution was fostered by the creation of the internet and technological advancement, and for that reason, it was called digital revolution. During this period, the automation of production, creation of the personal computer, internet, and implementation of new organizational models appeared, which required the requalification of professionals and led them to develop skills such as greater proactivity and creativity (Schwab, 2016).

According to Schwab (2016), the Fourth Industrial Revolution or industry 4.0 is based on the digital revolution, with the usage of technologies such as Artificial Intelligence (AI), machine learning, Internet of Things, 3D printing, nanotechnology, biotechnology, science of new materials, quantum computing, autonomous vehicles, robotics, all of connected to things and people over the internet. It will affect humanity like no other revolution has done, according to its scale, breadth and depth, systemic impact and interaction among the physical, digital and biological domains. This

transformation has been happening since the beginning of the century and has already started to affect the way we relate, do business, produce and live.

For Silva, Silva and Gomes (2002) the new organizational models, together with technological innovations, require a new professional profile, with new knowledge, versatility requirement, greater proactivity and creativity. The World Economic Forum - WEF (2016) emphasizes this change in business models and the demand for new skills and competences, due to the transformations of industries, associated with fast development of technology, demography and socio-economic disturbances. Table 1 shows a list of the skills demanded in 2018, the trends of skills demanded and those not demanded in 2022. From the skills demanded in 2022, 8 are listed in 2018, with the exception of the skills “Technology design and programming” and “Analysis and systems assessment”, which according to WEF (2018) highlight the growing demand for skills related to technology.

**Table 1** – Skills demanded and not demanded in 2018 and 2022

<b>Demanded skills in 2018</b>	<b>Trends of skills demanded in 2022</b>	<b>Skills trends that will be declining by 2022</b>
Analytical thinking and innovation	Analytical thinking and innovation	Manual dexterity, endurance and precision
Complex problem-solving	Active learning and learning strategies	Memory, verbal, auditory and spatial abilities
Critical thinking and analysis	Creativity, originality and initiative	Management of financial, material resources
Active learning and learning strategies	Technology design and programming	Technology installation and maintenance
Creativity, originality and initiative	Critical thinking and analysis	Reading, writing, math and active listening
Attention to detail, trustworthiness	Complex problem-solving	Management of personnel
Emotional intelligence	Leadership and social influence	Quality control and safety awareness
Reasoning, problem-solving and ideation	Emotional intelligence	Coordination and time management
Leadership and social influence	Reasoning, problem-solving and ideation	Visual, auditory and speech abilities
Coordination and time management	Systems analysis and evaluation	Technology use, monitoring and control

**Source:** WEF (2018)

It may be observed that throughout history, physical and manual skills are being migrating to basic cognitive skills.

## 2 METHODOLOGY

This article was developed based on an exploratory qualitative research, which aims to obtain data on what the professional skills of the future needed for Startups are to remain competitive in the face of market changes. An exploratory research, according to Vergara (2014), addresses themes and subjects with little accumulated knowledge. According to Gil (2012), an exploratory research aims to bring the researcher closer to the topic, generating greater familiarity, so that it is possible to raise hypotheses. For Gil (2012), qualitative analysis depends on some factors, such as data collection, research instruments and sample size, as it seeks to understand the motivation of the actors involved. Data collection was carried out through a structured questionnaire, consisting mostly of open questions, so that the motivation and insights of the interviewees could be captured. The questionnaire presented a descriptive content, orientation on the correct way to answer, and the term of guarantee of data confidentiality, following the main characteristics of a qualitative research. The survey was conducted electronically, sent via social networks (LinkedIn and WhatsApp), and aimed at founders, leaders and managers of Startups. For Creswell (2010), the data collection of a qualitative research is performed by an intentional sampling, for which the individuals are selected because they have experience with the main phenomenon. In the treatment of data, the technique of content analysis was used to understand what is being said on the subject (According to Vergara, 2014). Thus, patterns were identified, relating the

results of the research in two categories of analysis, created from the theoretical reference: first, challenges of startups, and second evolution of skills. The first category was discussed in the light of its two subcategories: challenges of the business model and challenges of hiring employees. The second was divided into three subcategories: competences of the past, current time and future.

### **3 PRESENTATION AND DISCUSSION OF RESULTS**

For the presentation and discussion of the results, categories and subcategories were retrieved as presented in the methodology. The survey obtained 46 responses; however, only 23 were eligible, due to the middle or senior managerial position in startup requirement from interviewees.

#### **3.1 Category 1: Challenges at startups**

According to Nogueira and Oliveira (2015), startups face great risks and challenges, due to their innovative nature from their business conception and the requirement for exponential growth. For the first subcategory, challenges of the business model, the results show that the two most mentioned challenges were the difficulties to hire and maintain a team of employees and capital and sales scale to maintain the startup's profitability, with 65% recurrence, each. Being scalable is one of the most important characteristics for startups, since they are looking for a business model that is profitable, repeatable of low cost (SEBRAE, 2017). When thinking about capital, according to ABStartup (2017), this is the biggest challenge facing startups, along with legal issues. However, in this research, legal issues were remembered by only 2 respondents. The third most recurrent challenge according to the answers of interviewees' speech was related to marketing, such as attracting and retaining customers and proposing an appropriate value to the market – these appeared in 43% of the responses. The challenges, such as corporate relations and the ability to develop the business, appeared only once in the results and are linked to soft skills. The second subcategory approached what the challenges found in the talent hiring process are. It is interesting to notice that the lack of financial resources and the lack of qualified labor are cited as the main obstacles in the formation of a talent team. Following, a dispute over talent in the market and a lack of confidence in the company's future were identified, as can be seen in the answers of two of the interviewees, it is difficult to find future employees “who believe in startups”, as well as “[...] retain them after they start receiving several other proposals [...]”. The research shows that due to the lack of capital, most companies do not have an HR sector specialized in hiring and retaining talent, finding it difficult to “find and effectively measure that a person fits in the position during the selection process [...]”, according to another interviewee. Another very mentioned challenge was the lack of qualifications found in the market, especially those related to soft skills issues, such as having “agility in mindset and openness to rapid changes”, according to another manager. These qualities are very important, since startups deal directly with innovation and have the need to undergo several adaptations during the search for their ideal business model (ABStartup, 2017).

#### **3.2 Category 2: Skills development**

To carry out the analysis of competences and their evolution, it was first asked what the most relevant skills in the current selection process were. In this case, in addition to the 10 skills taken from table 1, the interviewee could add other skills, which he/she deemed important, and give weights from 0 to 5 for each. The result showed that the 10 “Skills Demanded in 2018”, listed by WEF (2018), are very similar to those found in this survey, as they were all among the 11 most important skills for interviewees. It is noteworthy that in addition to these 10 skills, the “Technology and programming design” was added, among the 11 most important skills demanded for 2019 in this research. Regarding the skills that they considered important in the process of selecting new talents, not listed in the questionnaire, 43.5% of the interviewees added some. Among the most outstanding skills are resilience and the ability to work as a team. In addition to these two, the “owner spirit”, knowing how to seek and receive mentoring, leadership and ability to recognize and learn from error, were listed among the soft skills (human skills) required in the selection process today. Among the hard skills (technical skills) the knowledge in analytical programming, agile methodologies and the formation of squads were added.

According to Schwab (2016) the Fourth Industrial Revolution differs from the other Revolutions, due to three factors: systemic impact, breadth and depth, and velocity. The rhythms of growth have changed, due to the interconnection of the world and the new technologies that generate other technologies, and which are increasingly improved and competent. So, growth has gone from linear to exponential level. This supports the fact that 82.6% of the interviewees believe that the skills of their employees should undergo a transformation process to guarantee the success of their company in 2025, and 95.7% that their company will not act in the same way this year.

Table 2 shows the skills that startup managers believe will be important in the future, in order of importance. In order to carry out this analysis, the score that each interviewee attributed to the skills was added. From this, a change in the order was identified in relation to the skills required in the present and those that will be required in the future, with “Creativity, originality and initiative” being more relevant, which were found in the 5th position of the skills required in the present. According to Dutra (2004), due to technological innovations a new professional profile is needed for organizations, which make up multifunctionality, new knowledge, proactivity/initiative and creativity. According to the profile mentioned by the author, these skills will be required by managers seeking success in 2025 at their startups.

**Table 2 - Desired skill for 2025 by startups**

Skills	Sum of Notes
Creativity, originality and initiative	92
Analytical thinking and innovation	91
Complex problem-solving	90
Active learning and learning strategies	90
Emotional intelligence	86
Critical thinking and analysis	82
Reasoning, problem-solving and ideation	79
Attention to detail, trustworthiness	74
Coordination and time management	73
Leadership and social influence	72
Management of personnel	70
Reading, writing, math and active listening	67
Technology design and programming	65
Quality control and safety awareness	61
Systems analysis and evaluation	60
Technology use, monitoring and control	59
Management of financial, material resources	58
Visual, auditory and speech skills	57
Technology installation and maintenance	54
Manual dexterity, endurance and precision	43
Memory, verbal, auditory and spatial skills	43

**Source:** Authors

In an uncertain scenario, in which startups by interviews cannot imagine what will be happening in six years, but they mostly imagine that they will not be operating in the same way as today, it seems natural that creativity, originality and initiative; analytical thinking and innovation; active learning and learning strategies; and emotional intelligence are the five sets of skills and aptitudes most valued for 2025 by startups managers. On the other hand, skills such as manual dexterity, endurance and precision, memory, verbal, auditory and spatial skills, technology installation and maintenance do not have much added value for managers, due to the scenario of fast technological changes and the increasingly usage of technology to assist and/or replace human labor.

## CONCLUSION

In the present study, it was evident the greater demand for human skills, which are linked to the resolution of complex problems, active learning, analytical and innovative thinking at the present time, that is, in the Fourth Industrial Revolution. The few technical skills that emerge in the responses are linked to technological, logical and analytical knowledge, as well as to innovative methodologies, previously restricted to the IT universe. For the future (2025), there were no major differences observed among the most relevant skills, but the order of importance was changed. The five main sets of skills and aptitudes are related to human skills (soft skills), which support resilient behaviors to disruptive changes in the professional scenario and which will help companies to overcome uncertainties for the future. It was also noticed that the main competence deals with the professionals' ability to be creative, original and proactive that is, how they will be able to become protagonist of the new professional and business scenario, not only following changes, but also being a propellant of them. In addition, professionals with intra-entrepreneurial characteristics are expected. After all, the professional objective in the future is to be able to increase his/her own personal income, and together with company, increase both professional and company incomes.

For future studies, it is recommended to apply the unstructured questionnaire, in specific sectors of startups and large corporations, in order to have a better understanding of the reality in each universe, the motivations and obtain more insights about the skills that will be required. Among the limitations of the research, it is highlighted the difficulty of having a deep understanding of the motivations, given that the questionnaire applied was electronic. The other limitation concerns to the sample size, which despite being qualified, was reduced to justify the generalization of the findings presented here.

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