



LABOR MARKET AND WORKFORCE:

Occupational profiles with **technological skills most demanded in Medellín.**

The labor market is made up of the labor supply made up of the workers and the labor demand by the companies that hire these workers. People who are working (employed) or looking for (unemployed) are considered as the labor force, and according to data from DANE at the beginning of the second semester of 2022, the Colombian labor force was approximately 24.7 million people. Several dynamics positively or negatively impact movements in the labor market, one of which is the increasingly intensive **use of information and communication technologies** due to their great utility within organizations.

Various studies and works such as The Future of Jobs Report of the World Economic Forum (2020), show the growing demand and good remuneration for occupational profiles related to the area of technology or that require an important use of the Technological tools. According to the study on **the general state labor market (2021)** of the Observatorio de Sapiencia (OdeS) **the vacancies for technological profiles are largely related to web developers, data specialists and experts in social networks.**

This issues note focuses on identifying vacancies of these types of profiles, which are new and little known by the population. With this information we want to broaden the panorama and recognize opportunities that this sector can bring, which is projected to be one of the most prominent in the city of Medellín, due to the imminent transformation that the industry of the Fourth Revolution will have in the labor market, and in which Medellín has been harmonizing through the governing program of Valle del Software.

Precisely Sapiencia is one of the District entities that promotes the adaptation of technology as a means that can help solve crucial challenges of society such as access and educational coverage, the carrying out of public procedures, and a prioritized access to data of interest, among others; thus helping to improve the quality of life of the community. Specifically, the Post-Secondary Education Agency of Medellín (*Agencia de Educación Postsecundaria de Medellín*)-Sapiencia has two free programs and resources that support the educational process for several of the aforementioned profiles. The first of these is **Talento especializado**, which involves not only training in technical skills but also in soft skills and English; and the second is **the virtual citadel Arroba Medellín**, which also has a wide variety of courses aimed at improving the skills of these types of profiles.

To access these types of resources, we invite you to be aware of the details of the calls made by the entity to access its offer and thus enable the acquisition or updating of these important skills. Below is a brief overview of some of these outstanding vacancies, their profiles, as well as the main technical and soft skills they require.



Web developers

They are specialized programmer that desing, create and do maintenance to app and pages web, in this sense, they work in internet sites and intranet ¹.

NAME OF THE JOB	PROFILE	TECHNICAL SKILLS	SOFT SKILLS
FRONT-END DEVELOPERS WEB DESIGNER UX/UI DESIGNER	It's the person in charge of implementing all the design of the website through codes, that is, anything that the users can see or interact with.	Programming languages: <ul style="list-style-type: none"> • HTML • JavaScript (Angular, React, Vue, jQuery) • CSS (Bootstrap, Materialize) • API's Knowledge 	<ul style="list-style-type: none"> • Problem resolution • Reflective and self-critical capacity • Good time management
BACK-END DEVELOPERS JAVA DEVELOPER SOFTWARE DEVELOPER	It works with the server, databases and the APIs behind a web application, it articulates with the Front-end developer.	Programming languages: <ul style="list-style-type: none"> • JavaScript • HTML/CSS • Python • Server frameworks (Spring, Flask, Express, Laravel, Ruby on Rails) • Data structure/ Algorithms • Data bases (MySQL, PosgresSQL, Mongo DB, Microsoft SQL, Among others) • API's creation 	<ul style="list-style-type: none"> • Logical thinking • Problem solving • Reflective and self-critical capacity • Good time management
FULL-STACK DEVELOPERS	It is a developer who has the ability to work both for the interface (Front-end) and in what happens in the servers and data storage (Back-end), therefore, it will require all the skills mentioned above in the two profiles.		



Data Specialists

Another of the most demanded activities in terms of technological profiles are those related to data, according to the company, the specificity may be greater or there may be cases in which a person covers several profiles.

NAME OF THE JOB	PROFILE	TECHNICAL SKILLS	SOFT SKILLS
DATA ENGINEER	It is in charge of implementing processes that extract data from one or several sources, transform it to make it usable and load it into a final database for consumption by other professionals.	Programming languages <ul style="list-style-type: none"> • SQL • Python • Knowledge in Big Data Hadoop, Spark) • Experience with data API's de datos • Datawarehouse like AWS Redshift, Google BigQuery, Snowflake • Understanding basic concepts of HDFS and Amazon storing systems 	<ul style="list-style-type: none"> • Problem resolution • Results oriented
DATA ARCHITECT	Is the person in charge of planning the structure that will have the database(s) of the organization.	Programming languages <ul style="list-style-type: none"> • SQL • Python • Knowledge in big data (Hadoop, Spark) • Knowledge y cloud storing. • Knowledge in data bases (channeling and depuration) 	<ul style="list-style-type: none"> • Leadership • Results oriented

¹ A computer network that use the internet protocol technology to share information, operating systems or computer services within an organization

NAME OF THE JOB	PROFILE	TECHNICAL SKILLS	SOFT SKILLS
DATA ANALYST BUSINESS ANALYST BUSINESS INTELLIGENCE ANALYST B.I. ANALYST	Translates the data for the rest of the organization. He takes the data prepared by the data engineering team, looks for patterns and obtains information that it later translates for decision making. He is an expert in creating good dashboards.	<ul style="list-style-type: none"> Knowledge of advanced statistics. Knowledge of at least one BI suite (Power BI, Tableau, Looker studio, etc). 	<ul style="list-style-type: none"> Knowledge of the business model Problem solving Attention to detail
DATA SCIENTIST	It's the person in charge of designing models, experimenting and testing ideas to obtain understandable business insights from structured and unstructured data.	<ul style="list-style-type: none"> Python and machine learning libraries (scikit-learn, Tensorflow, XGBoost, among others) Knowledge of statistics and advanced mathematics. Knowledge of SQL Ability to take advantage of machine learning and artificial intelligence. 	<ul style="list-style-type: none"> Critical Thinking Knowledge of the business model Problem solving Intellectual curiosity
ML ENGINEER (MACHINE LEARNING):	They are in charge of taking the models proposed by the data scientists and turn them into clean, usable, and scalable code.	<ul style="list-style-type: none"> Python and machine learning libraries (scikit-learn, Tensorflow, XGBoost, among others) Knowledge of statistics and advanced mathematics. 	<ul style="list-style-type: none"> Knowledge of the business model Time management
DEVOPS/DATA OPS/ MLOPS ENGINEER	He focuses on ensuring that the data infrastructure is in operation 24 hours a day, guaranteeing the reliability, scalability ² and speed of execution of all its processes.	<ul style="list-style-type: none"> SQL Hardware knowledge of data flows Docker Use of cloud services Load balancing Cost structure 	<ul style="list-style-type: none"> Knowledge of the business model Change management Leadership Problem solving



Social networking experts

Although these profiles do not have technical programming knowledge like the previous profiles, they have taken on great relevance, especially after the COVID 19 pandemic, where commerce and interaction through digital media became a mandatory way to maintain interaction with clients and users. Consequently, companies and organizations not only have to think about a physical space but also how they can be present in the digital world. As with data experts, the profile will fulfill one or more roles depending on the company.

NAME OF THE JOB	PROFILE	TECHNICAL SKILLS	SOFT SKILLS
COMMUNITY MANAGER (CM)	Professional in charge of achieving the positioning of a brand through different media or digital channels focused on the community. Likewise, a CM is the spokesperson for a company and the person to whom the digital audience is going to go.	<ul style="list-style-type: none"> Execution of marketing strategies in social networks. Use of metrics Identification of opinion leaders Platforms like Hootsuite, Facebook Business, Tweet Binder, Google Analytics, BuzzSumo. Management of Social Ads (ads advertising) 	<ul style="list-style-type: none"> Creative and analytical thinking Knowledge of the business model Attention to details Good time management Audience understanding
SOCIAL MEDIA MANAGER	This is the name given to the person in charge of creating the Online Marketing Plan for a brand, in other words, the strategy that the Community Manager will apply.	<ul style="list-style-type: none"> Creation of marketing strategies for social networks Knowledge of tactics and trends from the market Customer segmentation Social Ad Management 	<ul style="list-style-type: none"> Knowledge of the business model Audience understanding Strategic thinking

² Word of Anglo-Saxon origin, which refers to the ability of a computer system to adapt its size or configuration as required.

NAME OF THE JOB	PROFILE	TECHNICAL SKILLS	SOFT SKILLS
SEO SPECIALIST	He/she is the one who is in charge of Search Engine Optimization, that is, the optimization of search engines. It works to ensure that the company's website has a greater presence and appears naturally in the top positions of search engines.	<ul style="list-style-type: none"> Marketing knowledge Market research and competition Data management and construction of metrics Basic knowledge in HTML Tools like Search Console or Google Analytics Knowledge of metrics and KPIs Knowledge of content creation 	<ul style="list-style-type: none"> Knowledge of the business model Audience understanding Analytical and creative thinking
DIGITAL CONTENT CREATOR	It is the professional in charge of creating images and videos for dissemination on the web and social networks.	<ul style="list-style-type: none"> Management of tools such as: Canvas, Evernote, FotoJet, Infogram, Piktochart, Storify, among others. Basic SEO knowledge Knowledge of metrics such as KPI 	<ul style="list-style-type: none"> Knowledge of the business model Audience understanding Innovative and creative thinking
E-COMMERCE EXPERT E-COMMERCE MANAGER	Responsible for the entire online sales process of a company. Defines the online sales strategy of a brand and executes it. He also handles relationships with suppliers and customers.	<ul style="list-style-type: none"> Mastery of ecommerce operations Work closely with the IT area to improve the user experience 	<ul style="list-style-type: none"> Knowledge of the business model Audience understanding Creative thinking
BLOGGER OR COPYWRITER	He/she is the author of the texts and the writer of the messages that a company distributes through blogs and Social Networks.	<ul style="list-style-type: none"> Good writing and originality Knowledge in digital marketing and SEO Trend identification 	<ul style="list-style-type: none"> Knowledge of the business model Audience understanding Creative thinking

It is recurring that some skills and competencies are required in all the profiles that have been mentioned, among the three most frequent are: **teamwork, collaborative, effective, assertive communication skills, and constant learning.**

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