

# **Young Talent Innovation Telefónica Scholarship**

## **Measuring the Impact of Innovation on Corporations**

David Vicente Manzano  
Pablo Reigosa Domínguez

# **Young Talent Innovation Telefónica Scholarship**

## **Measuring the Impact of Innovation on Corporations**

David Vicente Manzano

Pablo Reigosa Domínguez



**Young Talent Innovation  
Telefónica Scholarship**

Measuring the Impact  
of Innovation on Corporations

David Vicente Manzano  
Pablo Reigosa Domínguez

# Young Talent Innovation Telefónica Scholarship

Measuring the Impact of Innovation  
on Corporations

Official Degree in  
Business Administration and Management (BBAM)

End of Degree Project  
Tutor: Andrés Gómez Funes  
June 2021



September, 2022

*Young Talent Innovation Telefónica Scholarship. Measuring the Impact of Innovation on Corporations*  
David Vicente Manzano and Pablo Reigosa Domínguez

All rights reserved.

Any form of reproduction, distribution, communication to the public or transformation of this work may only be performed with authorisation from its copyright holders, unless exempt by law.

Should you need to photocopy or scan an excerpt of this work, please contact CEDRO ([www.cedro.org](http://www.cedro.org)).

© 2022, ESIC Editorial  
Avda. de Valdenigrales, s/n  
28223 Pozuelo de Alarcón (Madrid)  
Tel. 91 452 41 00  
[www.esic.edu/editorial](http://www.esic.edu/editorial)  
@EsicEditorial

ISBN: 978-84-19480-04-0

Cover design: ESIC  
Layout: Nueva Maqueta  
Printed by Gráficas Dehon

A notebook of



*Printed in Spain*

*This notebook has been printed with organic ink and sustainable paper.*



ACKNOWLEDGMENTS .....	9
RESUMEN .....	10
1. PROJECT APPROACH.....	11
2. INTRODUCTION .....	12
2.1. About Telefónica .....	12
2.2. About us.....	14
3. PROJECT OBJECTIVE .....	14
4. THEORETICAL FRAMEWORK.....	16
4.1. Innovation & Technology.....	17
4.2. Technology and Corporations .....	17
4.2.1. Industry 4.0.....	17
4.3. Industry 4.0 driver technologies: Current investment and future expected applications.....	18
4.3.1. Virtual Reality .....	18
4.3.2. Augmented Reality.....	19
4.3.3. 5G .....	19
4.3.4. Blockchain and Cryptocurrency.....	22
4.3.5. Cloud-Gaming.....	22
4.3.6. Wearables.....	22
4.3.7. Internet of Things.....	23
4.3.8. Cybersecurity Technologies .....	24
4.3.9. Sustainable Technologies.....	24
4.4. Technologies and Generations .....	25
4.4.1. Silent Generation .....	29
4.4.2. Baby Boom Generation.....	29
4.4.3. Generation X.....	30
4.4.4. Generation Y .....	31
4.4.5. Generation Z.....	31
4.4.6. Alpha Generation.....	32
4.5. Statistical methods to measure technology acceptance and innovation.....	33
4.5.1. Technology Acceptance Model (TAM) .....	33
4.5.2. Technology Acceptance Model 2 (TAM2) Explanation .....	34
5. PROJECT DESIGN (SURVEY DESIGN).....	39
6. PROJECT RESULTS & INTERPRETATIONS .....	43
7. PROJECT CONCLUSIONS & LIMITATIONS.....	65
8. BIBLIOGRAPHY.....	67



## David Vicente Manzano

I joined ESIC University in 2017, where I was lucky enough to meet Andrés Gómez Funes, current vice-rector of ESIC University, who was our mentor and tutor during all these years at university, including this final degree project. Now, finally graduated, I am ready to continue my way through the working world, as during my university years I was lucky enough to work at E-volucionaria, Real Madrid C.F and Sra Rushmore.

This research project was a great challenge as it gave us the opportunity to work with a great company such as Telefónica and to be able to present our project in this magazine fills us with pride and satisfaction as it is the recognition of the hard work of these months.

Thank you for the opportunity!

**f** <https://www.facebook.com/david.vicente.31586>

**in** <https://www.linkedin.com/in/davidvicentemanzano/>



## Pablo Reigosa Domínguez

I joined ESIC University in 2017, where I coincided with my colleague David Vicente, who, together with Andrés Gómez Funes, current Vice Rector of ESIC University, carried out this research TFG offered by such a large company as Telefónica, which has allowed us to obtain the Prize for best TFG/TFM awarded by the Camilo Prado Foundation.

I would like to thank my parents and my girlfriend for supporting me all these years of university, and especially the last year of my degree were combining university with my current job as Account Manager at HarBest Market has been hard to bear but very rewarding with the end of a stage and obtaining an award that recognizes the sacrifice.

**in** <https://www.linkedin.com/in/pablo-reigosa-dominguez-8204b6175/>

## Acknowledgments

As part of the work, we would like to include all those who have participated in one way or another in our final degree project, starting by thanking the support of our tutors; Andrés Gómez and Susana Jurado, who have been flexible with the times set and have supported and guided us throughout these 9 months. We would also like to thank ESIC University and its professors for the training we have received and Telefónica for giving us the opportunity to work with them. On the other hand, we would like to thank the participation and support of the people who carried out the survey at the time and especially those who spread the word. This group also includes friends and relatives, many of whom have helped us in working with the statistical model, with special mention to our colleague Diego Lorente and our friend Isabel Palacios. Before going on to personal acknowledgements (since it is a project between two students), we thank the participation of professors José Manuel Ponzoa, Carlos Queypo, Anett Erdmann and the recently deceased professor Jesús Calzadilla, who taught us everything we know about statistics and to whom we dedicate this project.

On a personal note, I, David Vicente, would first like to thank the company Sra Rushmore for the possibility of allowing me to manage my work time as I needed, allowing me to focus on my studies. On the other hand, I would also like to thank for the support received to my family and my closest friends, without whom in the most difficult moments I would have thrown in the towel. Among this group of friends are Víctor Elipe, Jaime Aritmendi, José Domínguez, Sofía Fernandez, Carlota Gallego, Paula Rendón, Javier Calderón, Javier Navarro and Beatriz Arrieta. Finally, I would like to thank my colleague Pablo Reigosa for his professionalism and performance in this teamwork.

For my part, as Pablo Reigosa, I would like to thank my partner Marta Calderón for her unconditional support. At the same time, I would like to thank my partner David Vicente, without whom this project would not have been the same and without whose dedication and stubbornness with excel we would not have reached where we are.

## *Abstract*

In this research project we will try to measure the impact of innovation in corporations by using a statistical device known as the Technology Acceptance Model. In order to cover a sample we will focus on Generation Z, which is set to be the future investment force. The objective of the



project is to obtain a reliable behavioral pattern and consumer profile acquired through a process of survey research and testing. In these surveys we will measure the relevance of key Industry 4.0 technologies for the selected sample, as well as the most relevant aspects they value when using them. Once the survey has been collected, we will weigh the results and try to interpret the relationships between the different answers, seeking to corroborate the questions posed at the beginning of the project. This work lays the foundations for further research due to the multiple limitations we have encountered, among which time and knowledge limitations stand out. The future project will provide answers to the unknowns that have not yet been corroborated and require complex statistical processes.

## *Keywords*

Innovation, TAM, Generation Z, Technology, and Industry 4.0.

## **Resumen**

En este proyecto de investigación trataremos de medir el impacto de la innovación en las corporaciones mediante el uso de un aparato estadístico conocido como el Technology Acceptance Model. Para poder abarcar una muestra nos centraremos en la generación Z, la cual está llamada a ser la futura fuerza inversora. El objetivo del proyecto es la obtención de un patrón de comportamiento y perfil de consumidor fiables obtenidos mediante un proceso de investigación y testeado por encuestas. En dichas encuestas mediremos la relevancia que tienen tecnologías claves de la industria 4.0 para la muestra seleccionada, así como los aspectos más relevantes que valoran a la hora de utilizarlas. Una vez recogida la encuesta, ponderaremos los resultados y trataremos de interpretar las relaciones que tienen entre sí las diferentes respuestas, buscando corroborar las incógnitas planteadas al principio del proyecto. Este trabajo plantea las bases para una futura investigación más a fondo debido a las múltiples limitaciones que nos hemos encontrado, entre las que destacan las limitaciones de tiempo y conocimiento. El proyecto futuro dará respuesta a las incógnitas que aún no han sido corroboradas y requieren de procesos estadísticos complejos.

## **Palabras clave**

Innovación, tecnología, generación Z, TAM e industria 4.0.

## 1. Project Approach

One of the significant challenges in corporate innovation today is what is called Innovation Accounting. Eric Ries<sup>1</sup> (*Eric Ries*, 2020), coined this term “Lean Startup”, as “the way to evaluate progress when all the metrics generally used in an established company (revenue, customers, ROI, market share) are effectively zero” (Eric Ries, 2020) (Mairesse J. & P., 2020; Ries, 2008).

The concept of Innovation Accounting has evolved in the world of corporate innovation to include three levels: the first to measure the degree of progress of a project, the second to measure the degree of improvement at the innovation portfolio level, and the third to measure the impact of innovation at the business level. This previous level that the project is focus and in the case of Open Innovation at Telefónica. The most challenging thing to measure to the impact of innovation is those most intangible aspects: cultural change, talent, the effect on the brand and the reputation of the company, etc. (Mairesse & Mohnen, 2002).

This project is divided into different phases:

- **Frist phase** is an introductory phase in which it is defined what innovation is and the current context in technologies, and the new changes and the challenges for corporations.
- **The Second phase** consists-of an exhaustive analysis of a selected sample defined by specific parameters and based on a reliable model.
- **The third phase** implies creatingand launching of a survey based on the topics already explained in the previous phases.
- **Forth phase** consist in the interpretation of data as a result of the research process in order to conclude with possible solutions to measure intangible innovation and understand what will be the facts that influence the sample identified as a long-term target for Telefónica.

Due to the breadth of the topic and the many possible ways to perform it, this research is supported by two key issues: The Z Generation, The Technology Acceptance Model (Davis, 1989).

On one hand, Z Generation is the most influenced Generation by technology and is perceived as the future trend consumer for Telefonica. Due to the real difficulties in defining the exact date to consider the members of Generation Z, we have taken the scale provided by Pew Research Center<sup>2</sup> (Pew Research Center, 2020). According to Pew Research Center, the Generation Z generational cohort spans from 1997 to 2012 (Pew Research Center, 2019).

Is also essential to note that the sample that taken will be people from Spain, and most of them from Madrid. Therefore, many of the references collected data and survey are provided in Spanish.

On the other hand, we have the Technology Acceptance Model as the most reliable way to be able to measure the level of acceptance that different technologies have on the people.

Personally, the main reason we choose this topic is because of how enrich it could it, we choose this topic because of how to increase it could be for our future and the attractiveness of the outcome.

For us, the outcome of this project is not only the opportunity to work with one of the most renowned Spanish Global Corporations, as Telefonica. But also, the knowledge that we can

---

<sup>1</sup> He is a successful entrepreneur and writer, recognized worldwide for his book *Lean Startup*.

<sup>2</sup> It is a non-partisan institution that offers updated information on the problems and trends occurring in the world, through surveys, research, analysis, etc.

acquire from researching about a Generation such as Generation Z, which will be the main target segment in the next 20 years for many companies. Also, we have oriented our future with companies related to innovation and highly invest in R&D. That is why, we think that the topic fits well with our personal and professional goals. This project means our showcase to the labor world and will bring a lot of experience for the future.

The research still focuses on bringing options for the telecommunication sector, especially for Telefónica because it is a scholarship provided by the company. Still, the whole topic offers solution to many other enterprises interested in the Generation Z as well as in the Technology Acceptance Model (TAM).

So as a summary; the goal for this End of Degree Project is to be able to measure the innovation in technology and the impact that it has on the corporations. And doing that understanding the Generation Z and what influences them most when purchasing a product or servicewill be defined following the TAM. It was a concept proposed by Telefónica, one of the most giant corporations in Spain and carried out by us, Pablo Reigosa and David Vicente, two students from the double Bachelor's degree in Business Administration and Management & Marketing Management from ESIC University.

## 2. Introduction

### 2.1. About Telefónica

Founded in 1924, Telefonica is a multinational telecommunications companywith its headquarters in Madrid (Spain), and which product portfolio goes from fixed phones to subscription television. Telefónica is one of the world largest telecommunications enterprises and operates in more than 30 countries, with total presence in Germany, Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Spain, Mexico, Peru, United Kingdom, Uruguay, and Venezuela and with strategic allies in the rest of the world. However, most of its benefits come from Spain, Germany, and Brazil (Telefónica, 2014).

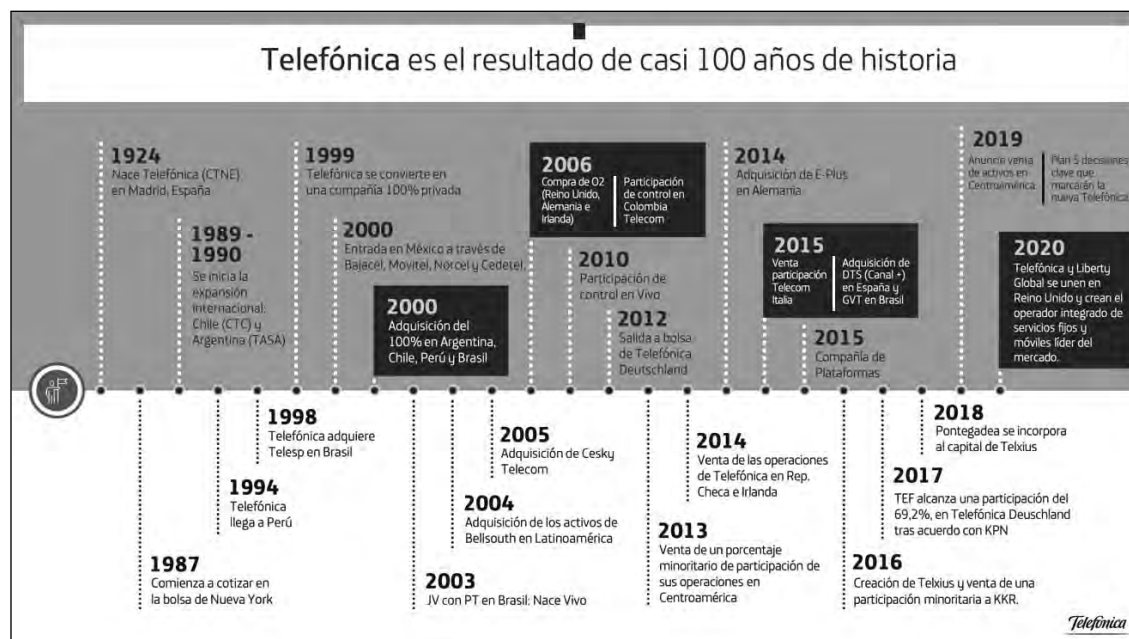
FIGURE 1  
DEVELOPMENT OF THE HYPOTHESIS



Source: (2021) Retrieved from Telefonica Web Page on 24/04/2021, from (Presencia Comercial | Telefonica Wholesale, 2021).

Customers identify Telefónica through their different commercial brands; Movistar, O2, and Vivo between others. These brands integrate mobile, fixed-line, broadband, and television telecommunications services to 337 million customers in different countries. Telefónica is a company sensitive to the new challenges that today's society demands. That is why they offer the means to facilitate communication between people, providing them with the most secure and cutting-edge technology, to live better and achieve what they set out to do without problems of connectivity.

FIGURE 2  
TELEFÓNICA IS THE LEGACY OF ALMOST 100 YEARS OF HISTORY



Source: (2020) Retrieved from Telefónica Web Page14/01/2021, from (Presencia Comercial | Telefónica Wholesale, 2021).

### Why is Telefónica investing in this type of project?

Innovation has been part of Telefónica's DNA since its inception. It is a company that understands that the ability to anticipate the future, understand its needs, and to work to continue being pioneers in the digital world is essential.

Without neglecting its core business, Telefónica ensures that 80% of its 5.6 M€ in R&D + Innovation investment is focused on identifying future opportunities and for its core business, and 20% on finding new spaces where the company can reinvent itself through disruption.

With this said, there exist different departments in the Telefónica Innovation area:

- Core Innovation is the area that works to innovate on Telefónica's core platforms and services, such as the network, data, or video through its developments.
- Scouting and Innovation Investments are looking for potential partners and medium and mature companies in interested in investing because it is a potential source of innovation.
- Open innovation, through Wayra Hubs and Open Future public-private collaboration spaces, identify this innovation in entrepreneurial ecosystems practically all over the world. It is in this department where we also find the UniX unit.

“UniX” is a unit within the “Connected Open Innovation” area, Telefónica’s open innovation organization. It’s mission is to connect the company with the academic world to develop collaboration models that provide a joint response to the challenges posed by the society of the future by promoting innovation and entrepreneurship (Telefónica, 2020).

This unit is an enabler within the Connected Open Innovation area but also within the Connected Open Innovation area and for the rest of Telefónica’s areas, building bridges between the academic world and the company it was launched in 2020.

## 2.2. About us

We are two students in the 4th year of BBAM, at ESIC University. We are curious interested in research and eager to learn and face complex challenges such as the one we develop in this project. Technology, innovation and intangible brand concepts have always been very present in our lives, due to factors such as the professions of our parents in large telecommunications companies in the case of David and the creation of Start-Ups on the part of Pablo and his family. David stands out more in aspects of brand intangibility, telecommunications and technology because he has worked in the advertising sector for companies such as Vodafone or Lowi and in turn has been trained in fields such as digital innovation consulting since the first year of his career. However, the field of innovation is better covered by Pablo, whose father founded a Trebol Group Providers that today continues to operate nationwide and with just 22 years has been appointed Senior Success Specialist in the Star-Up called Harbest Market.

## 3. Project Objective

The research aims to analyze the investment in technological innovation and the impact it has on corporations. As a proposal to develop a method that would allow Telefónica to measure the impact of innovation in the company, an approach was proposed that focused on providing a reliable way to measure the level of acceptance of a target segment to provide a long-term solution in terms of investment in technology for Telefónica. The segment selected was Generation Z, as both the company and the researchers considered this Generation to be very relevant for the future. Given the universal understanding of the timeline, this Generation is presented as the future major economic and investment force for the future next thirty years.

The ideas that come to mind when developing an investigation are infinite and therefore the questions, we ask ourselves are also boundless. Some of the questions are:

- What do we mean by innovation?
- What model is used to measure the acceptance of technology?
- Which Generation is most influenced by innovation?

These questions will allow us to implement the basis of our research. On the one hand, to investigate which is the best model to understand technology, its impact, and its acceptance. On the other hand, to identify the most technological Generation with the highest influence on companies in the coming years and to understand the way in which they affect the rest and make decisions.

We wondered if the set of people that formed a Generation would influence the market, and therefore the production process of companies. During the identification process several

publications (Sitman, 2017; Jesús Espinosa, 2020; McIntosh-Elkins et al., 2007b; Strauss & Howe, 1991; van Eck Duymaer van Twist & Newcombe, 2021), allowed us to identify our study group. The segment selected was Generation Z, as both the company and the researchers considered this Generation to be very relevant for the future, as given the universal understanding of the timeline this Generation is presented as the future major economic and investment force for the next thirty years.

The research has an informative phase covered in the theoretical framework, where the context of innovation commonly accepted by Generation Z individuals is explained. The survey items are proposed as a result from the Primary Research Phase and are selected after an evaluation process by the students, David Vicente and Pablo Reigosa (members of the Generation studied) and experts in the field such as tutors Andrés Gómez Funes, from ESIC University, and Susana Jurado Apruzzese, from Telefónica.

As part of the research, we studied several models that could fit to measure technology integration. Finally, we selected the Technology Acceptance Model 2 (TAM2) because it was more complex and novel than TAM1 (Davis & Venkatesh, 1996; Venkatesh & Bala, 2008). This model helped us to define the subjective issues proposed by the TAM in a way that fit much better with the vision and objective of the project that both students and tutors had agreed upon.

Once the first phase of the research has been carried out, where the content studied is captured, a questionnaire consisting of eight questions in three different blocks (developed in point 5 of the project) is carried out.

The third phase of the research will provide accurate data obtained from the questionnaire that will allow us to group the sample into different segments, distinguishing them into different types of investors. In this phase we will also apply the proposed statistical method to measure innovation. We will be able to provide quantitative values for the degree of acceptance of the different technologies presented.

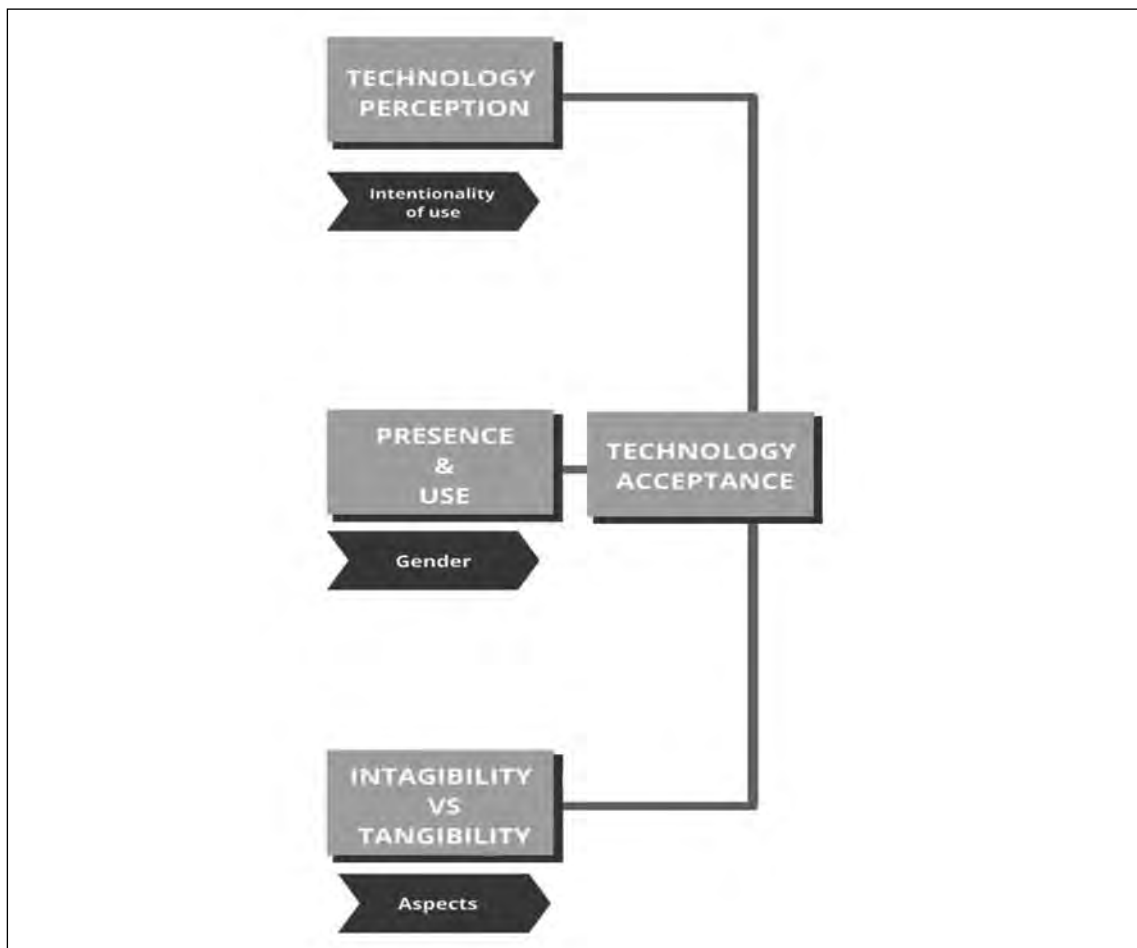
The last phase of the project will explain the hypotheses developed in this point, and therefore conclude with reliable and real solutions for Telefónica.

Ho. Acceptance of the technology can be measured.

- H1. The perception of relevance is directly proportional to the investment intentionality in each technology.
  - H1.1. Cybersecurity is the most valued aspect when buying a technology.
    - H1.1.1. More than 50% of interviewees would invest in cybersecurity.
  - H1.2. Generation Z people would invest in sustainable technologies, either as a consumer or as a business.
- H2. The importance of technology in women is greater than in men.
  - H2.1. Voluntariness is a factor with a more positive relationship in women than in men.
  - H2.2. Women use technology for gaming to the same degree as men.
  - H2.3. Men are more susceptible to phone calls than men.
- H3. There is a relationship between the tangible and intangible values of technology.
  - H3.1. People who invest their time in video games invest their money in Cloud-Gaming.
  - H3.2. People who value the image aspect would invest in wearable technology.

- H3.3. Recommendations from friends and experts are less relevant to the user than the qualitative aspects of the product.
- H3.4. Brand reputation is more relevant than the functional aspects of the product.
- H3.4. Feeling part of a community is the most irrelevant value for the users surveyed.
- H3.5. Users who spend time on social networks attach much more importance to feeling part of a community.

FIGURE 3  
DESIGN OF THE HIPOTESIS



Source: Own Elaboration based on our own data (Venkatesh & Davis, 2000).

## 4. Theoretical Framework

This part of the work will define the concepts that will later be relevant in the research, and the relationships between these concepts and the context they have in today's society. It is essential to emphasize the necessity of this part for the reader, since it will be crucial to understand the research as accurately as possible in the future.

## 4.1. Innovation & Technology

In this research we must measure innovation and its impact on companies, but what is innovation? According to the definition offered by the Royal Spanish Academy (RAE), the word innovation comes from the verb innovate, which is understood as “To change or alter something, introducing novelties”. From this definition, we can introduce the term we are interested in, “technological innovation” (*Innovación y gestión del conocimiento*, Roberto Carballo, Google Libros, 2006). Technological innovation is a concept made up of several actions and elements. It refers to the creation of new products or services. It refers any improvement in the product or service and the production processes, and not only focuses on the production of new services, products, or processes, but also on the improvement of existing ones (*Innovación tecnológica, tipos y características principales*, 2017, *¿qué es innovación tecnológica?* Euskadi+innova, 2007, Galicia & Galicia, 2015).

We can find four types of technological changes within technological innovation depending on the task it performs (*Diseñar innovación radical* | OpenMind, 2011). First, we find radical innovation, which refers to innovations that allow us to reach new markets. Second, incremental innovation, which refers to innovations that improve technological processes based on previous designs. Third and fourth, we can find technological systems and paradigm changes. Technological systems changes involve radical and incremental innovations, and paradigmatic changes are mutations in the preconceived ideas of technological and production systems. This last point would be an industrial revolution, such as Industry 4.0, which we will develop below (Innovación, 2017; Pérez, 2017).

## 4.2. Technology and Corporations

### 4.2.1. Industry 4.0

Throughout the life of the human being, there have been several moments in history in which technological applications have produced radical transformations in creating, having essential impacts on the quality of life of societies. Currently, we live the fourth significant change produced by technology throughout history. This change is called the Fourth Industrial Revolution or Industry 4.0.

Prior to this, there have been three industrial revolutions that impacted on the productive capacity that enhanced the manual capacity of human beings. Industry 4.0 is characterized by breaking the barriers of knowledge through the introduction of IOT and artificial intelligence (AI), to capture all process data and extract information from them, improving decision-making capacity and human intelligence.

Which elements make up this new revolution? This revolution combines advanced production techniques with operations developed with intelligent technologies. The industrial revolution is an innovation with a paradigm shift that has transformed the world and its idea. The changes brought about by this revolution include the introduction of new technologies such as robotics, analytics, cognitive technologies, artificial intelligence, nanotechnology and the Internet of Things (Gayo, 2019; Vicente Muñoz, 2017).

The importance of this technology since it not only affects manufacturing processes. This revolution is within everyone's reach and impacting all industries, sectors, and society. Industry 4.0 improves business operations and enables revenue growth by transforming products, supply chains or customer expectations. In addition, it develops new products and services that affect the points mentioned in the previous line (Deloitte & Accenture, 2019).



## 4.3. Industry 4.0 driver technologies: Current investment and future expected applications

### 4.3.1. Virtual Reality

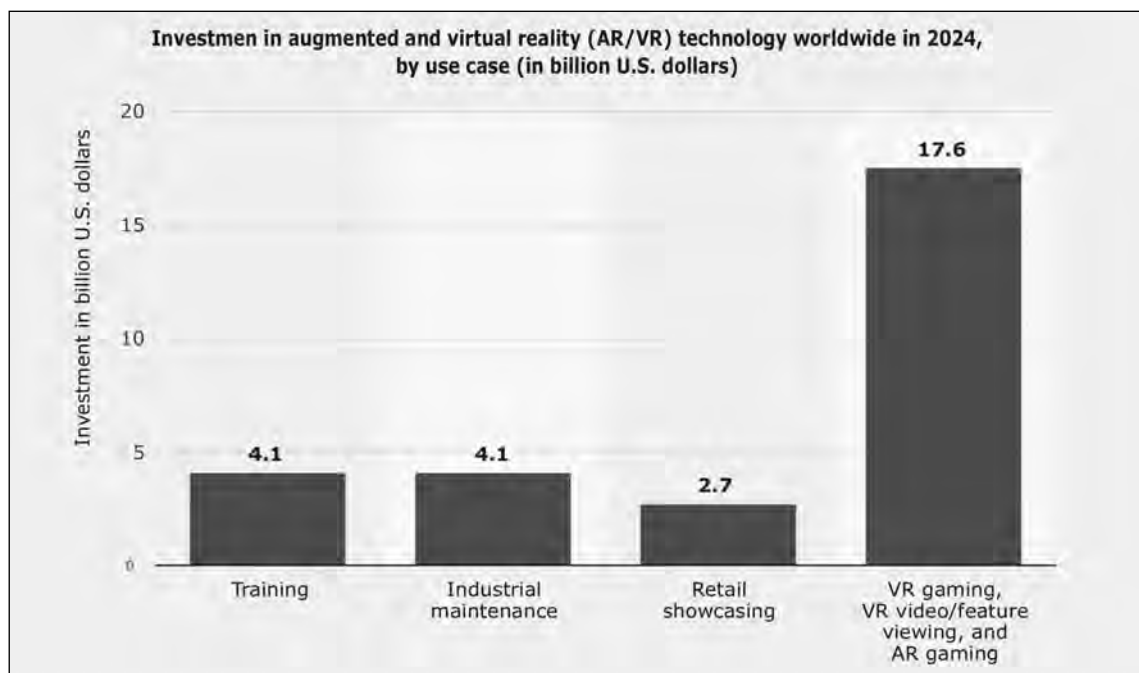
#### **Concept Definition**

Virtual Reality (VR) is a technology that produces an environment external to the one that surrounds us. This technology inhibits us from Reality, introducing a digital climate offering scenes and objects that seem real. The person perceives this environment through a technological device called a Virtual Reality helmet (*Realidad virtual, la tecnología del futuro*, Iberdrola, 2020). This device was born in the 1950s, with the development of Sensorama, a machine that reproduced 3D movies, emitted aromas and generated vibrations («El primer simulador VR de la historia tenía forma de recreativa, y se inventó a finales de los 50», 2018).

#### **Investment & Applications**

VR is a technology used in all sectors, such as medicine, culture, education, architecture... It is a technology yet to be discovered, whose capabilities and utilities we have just found out. More and more companies are looking to commercialize this product and win the virtual reality glasses race (*Realidad virtual, la tecnología del futuro*, Iberdrola, 2020, “Principales aplicaciones para gafas de realidad virtual”, TicNegocios.es, 2017). Let us look at some examples. Allumete, creation of Penrose Studios, which is the first narrative story in Virtual Reality (“Allumette”, primera narrativa en realidad virtual que debuta en el Festival de Cine de Tribeca | *Magazine*, 2016). Also, we have Google Earth Rv, which allows you to travel worldwide without leaving your home (Google Earth VR, n.d.). The latest example is Ocean Rift, which allows you to sail the oceans and discover the depths of the sea (Ocean Rift en Oculus Rift | Oculus, 2021).

FIGURE 4  
INVESTMENT IN AUGMENTED AND VIRTUAL REALITY



Source: (2020) Retrieved from Statista 17/05/2021, from (• AR/VR Investment Worldwide by Use Case 2024 | Statista, 2020).

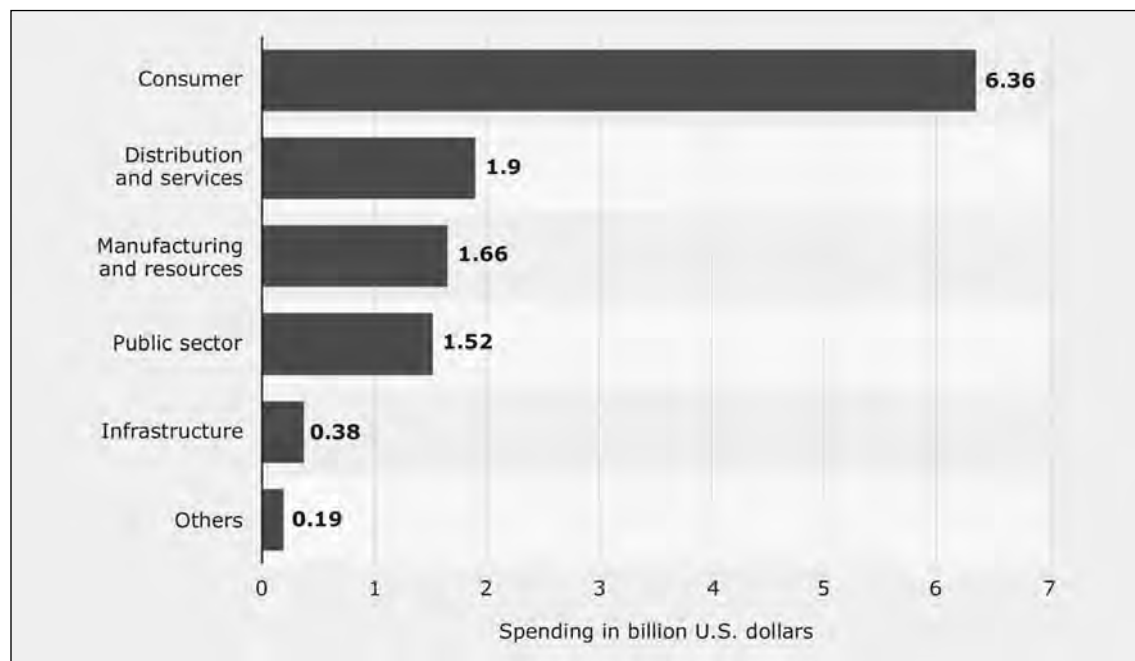
### 4.3.2. Augmented Reality

#### **Concept Definition**

This technology allows us to see the real-life environment changing certain aspects that cannot do by ourselves. This is possible due to technologies that make these changes virtually. The concept was born from the hand of the scientist Thomas P. Caudell in 1992 (Caudell & Mizell, 2003; Rese et al., 2017; Gausemeier et al., 2011).

#### **Investment & Applications**

FIGURE 5  
AR AND VR FORECAST SPENDING WORLDWIDE IN 2020 (IN BILLION U.S. DOLLARS),  
BY SEGMENT



Source: (2020) Retrieved from Statista on 17/05/2021, from (• AR/VR Spending Share Worldwide by Segment 2020 | Statista, 2020).

Augmented Reality is very present in everyday life and is currently a business that brings about 120,000 million dollars a year globally. It is used in different fields such as navigation systems, in television to show in detail certain aspects, such as an offside in a soccer match, in museums to project an image of a figure or an ancient settlement of a past civilization (T. H. Jung & tom Dieck, 2017; Rese et al., 2017b).

### 4.3.3. 5G

#### **Concept Definition**

5G is the next Generation of mobile network technology, specifically the fifth Generation. This version vastly improves mobile Internet access features such as bandwidth, connected device capacity and latency, compared to previous Generations (1G, 2G, 3G and 4G) (Teli et al., 2019). The most extraordinary ability of 5G is that it allows the transfer of an immense amount of data

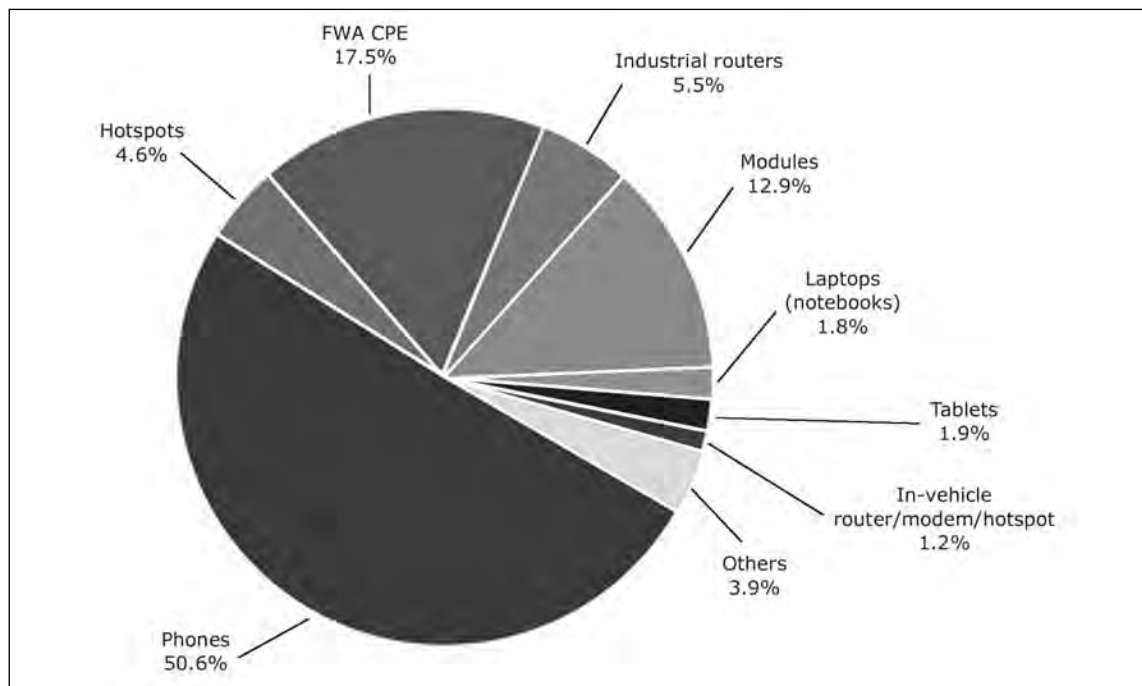
in real-time and is positioned as one of the key pillars of the industrial revolution 4.0. To better understand what this new technology is, it is essential to be clear about the functionalities offered by past Generations.

The first technological Generation, the 1G refers to the base technology of cell phones. This Generation allowed cell phones to contact each other exclusively via voice. The second Generation, or 2G, introduced text messaging, which made cell phones more complete communication tools. With 3G finally came mobile web browsing, which allowed connection to the Internet from anywhere. The goal has been to improve this connectivity, since there are more and more users and devices, with 4G being a technology that offered higher data speed and which was characterized by allowing mobile video consumption.

5G technology arrives to improve the knowledge of smartphone and fixed wireless access users, as it can provide homes with fiber speeds without fiber. It is truly a technology born to address hyper-connectivity and to drive the digital transformation of enterprises further (Ghosh et al., 2019; Li et al., 2018).

### ***Investment & Applications***

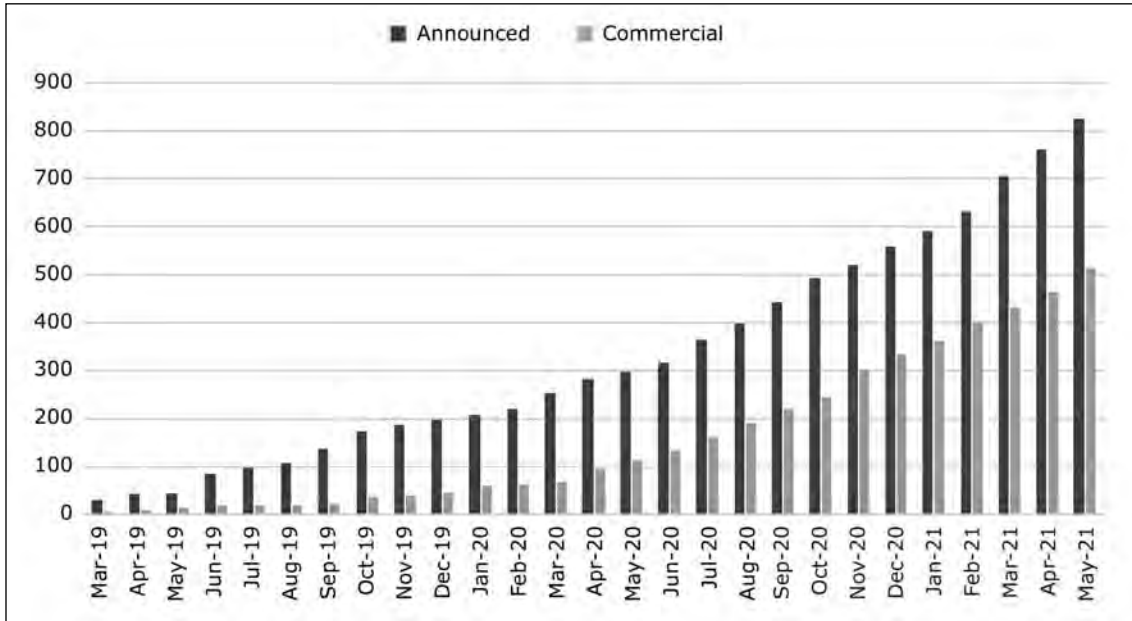
FIGURE 6  
**5G FUNCTIONALITIES**



Source: (2021) Retrieved from Device Ecosystem on 21/6/2021, from (referencia GSA-5G-Device-Ecosystem-ES-June-2021).

The qualities of 5G make its potential applications very broad despite the fact that it is currently only being applied commercially to a limited number of products, particularly 822 devices (Global, 2021).

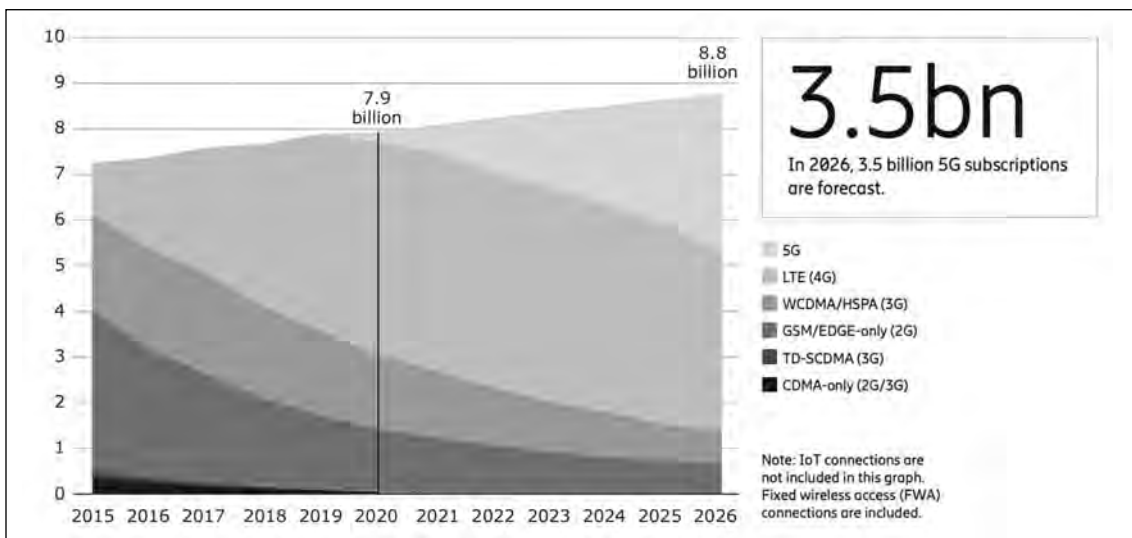
FIGURE 7  
GROWTH OF 5G DEVICES



Source: (2021) Retrieved from Device Ecosystem on 21/6/2021, from (referencia GSA-5G-Device-Ecosystem-ES-June-2021).

Despite the uncertainty generated by the pandemic (Ericsson, 2016) mobile providers have stayed the course in their corporate strategy. They have continued to invest in 5G, with 100 advertisers worldwide already offering 5G services. In addition, the estimated number of 5G users has increased due to faster than expected adoption by China, driven by a strategic national focus, intense competition among 5G service providers and the development of more affordable 5G smartphones from several domestic vendors.

FIGURE 8  
MOBILE SUBSCRIPTIONS BY TECHNOLOGY (BILLION)



Source: (2020) Retrieved from Ericson on 14/5/2021, from (informe de movilidad de Ericsson, noviembre de 2020).

#### 4.3.4. Blockchain and Cryptocurrency

##### **Concept Definition**

Cryptocurrency is a digital asset, that does not exist in physical form and are stored in a digital wallet. Their difference from the traditional transaction system is that institution does not regulate them, and no intermediaries are needed during their transactions. A decentralized database, called blockchain, is needed for its proper functioning, which is a chain with encrypted information that records all transactions made by all users (*¿Qué son las criptomonedas y cómo funcionan?*, 2021; *Claves para entender la tecnología*, “Blockchain”, 2019).

##### **Investment & Applications**

The current Reality is that it is a digital currency used primarily as a financial asset, like gold, rather than as a transaction currency. (*¿Es el bitcoin un activo de inversión?*, Eleconomista.es, 2017).

#### 4.3.5. Cloud-Gaming

##### **Concept Definition**

Cloud gaming is a way to play video games through remote hardware, which usually corresponds to a company's servers. Instead of downloading or installing them through a disc and playing them locally, cloud gaming relies on streaming (Campos & de Assis Azevedo, 2020). This means that your console, TV, cell phone or computer will not depend on its hardware. As a result, games that cannot be played locally can easily be played via the cloud. The only requirement is that cloud gaming requires a permanent Internet connection to work. No data, not even game data, is stored on the system, but is saved remotely in the cloud (Gao et al., 2019; Illahi et al., 2020).

##### **Investment & Applications**

The first platforms to stream video games were launched in the last decade and it has been a sector that has become more relevant as time went by. In the beginning, the platforms were focused on PC and console platforms, but today, thanks to 5G, new opportunities are opening up. The expansion to the mobile gaming market is growing and the importance of streaming platforms such as Twitch and Youtube is increasing. It is worth mentioning the relevance of Spanish streamers such as Ibai Llanos, Auronplay, ElRubius, TheGrefg, Willyrex and many more who are recognized worldwide even with Guinness records (Sergio C. González, 2020).

The growth of this sector and the facilities offered by 5G make it a desirable proposition for investors in telecommunications companies and members of the television world, who realize that they are losing market share to the new disruptive models. At the same time, new platforms are emerging, such as Google Stadia, and online gaming is considered a must for video game developers (*Streamlabs and Stream Hatchet Q4 Live Streaming Industry Report* | by Ethan May | Streamlabs Blog, 2020).

#### 4.3.6. Wearables

##### **Concept Definition**

Wearable is a portable technology. Its main feature is mobility. In addition, the basis of its manufacture is the IoT, since it is what allows it to receive and emit data constantly through interconnectivity (*Tecnología wearable: qué es, tipos de dispositivos y ejemplos*, Iberdrola, 2019).

### Investment & Applications

It is a technology that is in constant development, being applied in different areas. Currently, some of them are, exercise monitoring devices, smart watches, smart clothing, smart jewelry... It is also a technology that can be implanted in people by surgery (*¿Qué es wearable y qué tipos de dispositivos existen?* | VIU, 2019).

According to a study conducted by the University of Valencia, it was estimated that, by 2020, the wearable industry would exceed \$30 billion. On the other hand, according to a report by Forrester Research<sup>1</sup>, by 2025 around 14.4 million U.S. workers will be wearing smart glasses, daily as a work tool (Gonwder, 2016).

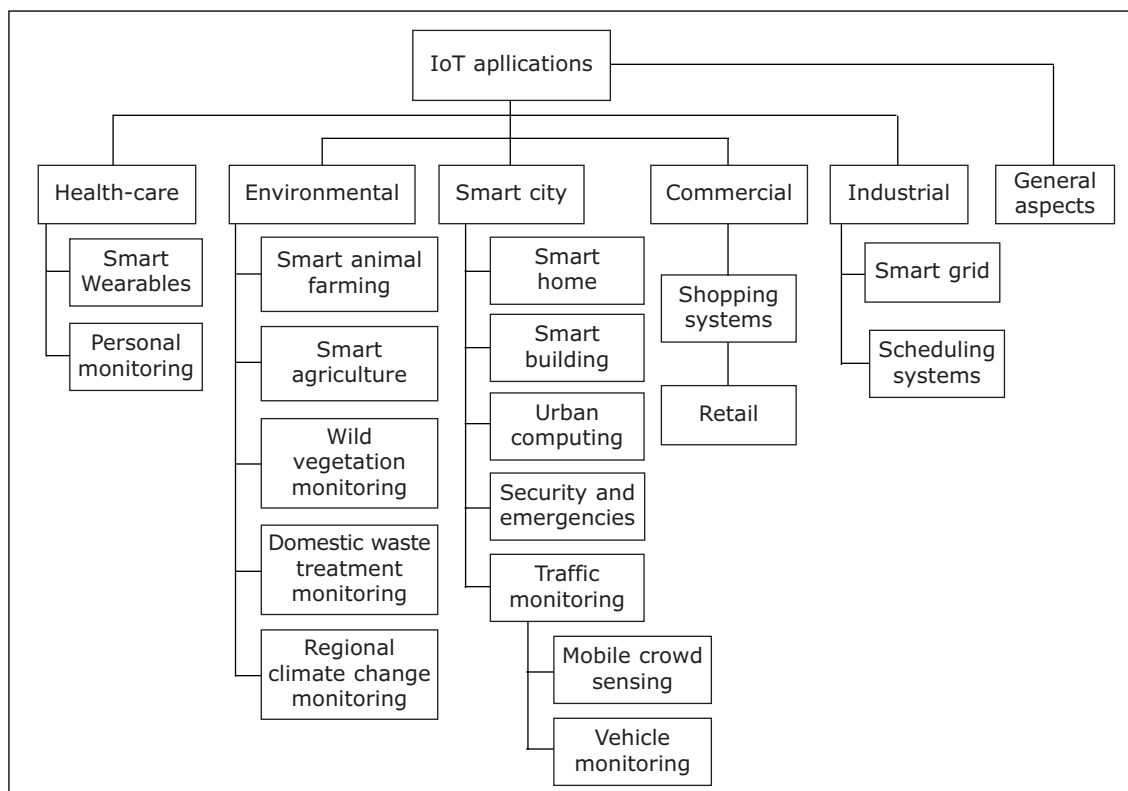
### 4.3.7. Internet of Things

#### Concept Definition

Internet of Things (IoT) is the network of physical devices, sensors within intelligent environments and their interconnectivity enables objects to communicate and share data (I. Lee & Lee, 2015; Teli et al., 2019). IoT contributes to the interactions between objects and humans. It opens the door to the realization of smart cities, infrastructures, and services to improve the quality of life and increase resource utilization.

#### Investment & Applications

FIGURE 9  
THE TAXONOMY OF IOT APPLICATIONS



Source: (2018) Retrieved from Research Gate on 24/5/2021, from (The Taxonomy of IoT Applications. | Download Scientific Diagram, 2018).

Its applications are infinite as IoT is the engine of other technologies in the market. Some examples are the Smart Home, with software that simulates human conversation through artificial intelligence (I. Lee & Lee, 2015). We can also find it in wearables, in the industrial sector, in Smart Cities, in agriculture... Its application is infinite and fundamental for the development of new technologies.

#### 4.3.8. Cybersecurity Technologies

##### **Concept Definition**

Cybersecurity is the term given to the practice of defending computers, servers, or other devices from cyber-attacks. It is a purely technological tool and has several applications.

##### **Investment & Applications**

We live in an increasingly digitized and interconnected world, so the development of cybersecurity is becoming more critical. Its functions are varied, and these are some of them (*¿Qué es la ciberseguridad?*, Cisco, 2018).

- *Network security*: It consists of protecting a computer network from the cyber-attacks it receives.
- *Application security*: It focuses on keeping the software and the different devices free of possible threats.
- *Information security*: It is based on the integrated protection of the privacy of each device data, ensuring the proper storage and transit of the information.
- *Operational security*: Formed by data handling and protection processes. A clear example is the permissions that a user must access the network.
- *End-user training*: Refers to individuals. It consists of the most theoretical cybersecurity; those processes allow users to learn how to eliminate possible threats.

#### 4.3.9. Sustainable Technologies

##### **Concept Definition**

All those technologies use a lower proportion of energy and limited resources when performing their function, reduce their impact on the environment and preserve their impact on the environment and preserve natural resources (Akbari et al., 2020; Kishna et al., 2017). All the technologies mentioned above aim to become sustainable technologies. Awareness for the preservation of planet earth has increased in recent years with the movement of the younger Generations who see how the planet they live on is suffering (*El 61% de los millennials, dispuestos a pagar más por productos sostenibles y ecológicos (clientes y productos)?*: Compromiso RSE, 2020). In recent years, companies have been seeking to redirect their image searching for a greener and more ecological vision to attract the investors of the future. With the development of this feeling of sustainability on the part of people, criteria called ESG have been created, which stands for Environmental,<sup>3</sup> Social<sup>4</sup> and Governance<sup>5</sup> (*¿Qué son los criterios ESG*

<sup>3</sup> The effect that companies have on the environment either directly or indirectly.

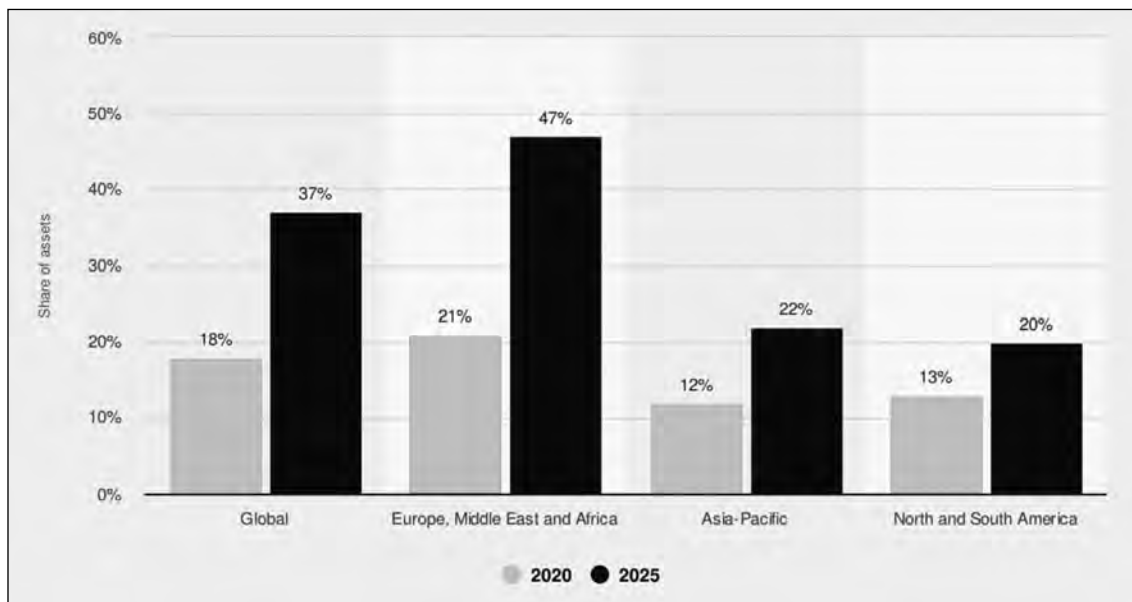
<sup>4</sup> Refers to the impact that the company has on its environment, i.e. on its community.

<sup>5</sup> Refers to the company's corporate governance, i.e. the company's laws and policies, values...

(‘environmental, Social and Governance’)?, 2021). Therefore, all those technologies that do not apply these acronyms in the short term will suffer economic losses in the long time, since consumers will not be interested in them. One example is cryptocurrencies. Currently, due to their operating model, they pollute a lot and this affects their image. Their pollution is due to mining, which comprises so many powerful devices that are continuously connected and consume a large amount of energy (Grosso, 2021; *La contaminación generada por las criptomonedas torpedea su imagen*, Levante-EMV, 2021).

### Investment & Applications

FIGURE 10  
SHARE OF SUSTAINABILITY INVESTED ASSETS AMONG INVESTORS WORLDWIDE  
IN 2020 WITH A FORECAST FOR 2025, BY REGION



Source: (2021) Retrieved from Statista on 25/05/2021, from (• Share of Sustainably Invested Assets by Region 2025 | Statista, 2021).

## 4.4. Technologies and Generations

Once the different technologies have been defined, we must know who uses the technologies and how they use them. We have supported our research by following the generational division, founded on the study of people’s behavioral patterns, originating in Strauss-Howe Generational Theory, written by authors William Strauss<sup>6</sup> and Neil Howe<sup>7</sup> and other essays<sup>8</sup> (*Lifecourse Associates: Neil Howe, Bio*, n.d.; *William Strauss and Neil Howe’s Fourth Turning: The Pseudoscience That Prepared America for Steve Bannon’s Apocalyptic Message – Quartz*, n.d.; van Eck Duymaer van Twist & Newcombe, 2021, Mannheim, n.d.).

<sup>6</sup> He was a renowned American writer, recognized for his study on social generations and for being one of the promoters of the Strauss-Howe Generational Theory.

<sup>7</sup> Famous American writer, founding partner of LifeCourse Associates with Strauss and co-writer of Strauss-Howe Generational Theory.

<sup>8</sup> We find other authors who have benefited the generational study such as Karl Mannheim in “*The Problem of Generations*” (1923), Norman Ryder who introduces cohorts in his essays or Morris Massey who defines the Baby Boomers Generation.



Before our explanation, we must explain the concept of Generation. Collins Dictionary<sup>9</sup> defines Generation as “A *Generation* is all the people in a group or country who are of a similar age, especially when they are considered as having the same experiences or attitudes”.

Strauss-Howe went beyond this definition and based their project on the explanations given by two of the most influential authors who developed the term Generation. The first author was the psychologist Mannheim, who in his essay “*The Problem of Generations*”, assures and justifies that each Generation has its values, which evolve as the individual relates to the rest of society, giving rise to a new term closely linked to the one that concerns us, *Generational connection*<sup>10</sup> (Mannheim, 1927). According to this definition, a Generation is formed by connecting its individuals who share a common experience (Elder, 1998; Lyons, 2004).

The second author is Ortega y Gasset<sup>11</sup> (Javier Zamora Bonilla, 2013), a Spanish philosopher, who invested part of his life developing the concept of Generation. Ortega defines Generation as “*Compromiso dinámico entre masa e individuo, es el concepto más importante de la historia, y, por así decirlo, el gozne sobre la que esta ejecuta sus movimientos*” (Ghiardo, 2004). There are two criteria for Ortega to identify a member of a Generation, the first being the age cohort and the second, the ability to share a series of common cultural elements (Ortega y Gasset, 1934).

For Ortega, the human has been, is and will continue to be the same. The only thing that varies from one human to another will be the circumstances inserted in a historical framework within a life cycle (Ortega y Gasset, 1934). Ortega considered that each Generation would move on two levels. On the one hand, the level that allowed it to receive all the experiences of the past Generation and, on the other hand, the level that allowed it to obtain its own affairs, allowing the spontaneity of the group to flow.

In this sense Ortega stated that the spirit of each Generation would be established because of the degree of weight of each level (Espina & Diciembre, 2006). To Ortega, the most important thing about the Generations was not that one succeeded the other, instead it was to understand how the new Generation was spliced to the previous one.<sup>12</sup> Therefore, when two Generations were in the exact historical moment, living the same phenomena, they would always do it with different visions due to their changing spirit, giving rise to the change, and therefore to the process of innovation (Ghiardo, 2004).

This concept has been studied over the years by different authors in sociology such as Edmunds and Turner (Edmunds & Turner, 2005), Jaeger (Jaeger, 1985), Ryder (Ryder, 1965), or Howe and Strauss (Strauss & Howe, 1991). We have developed the study of the last two authors to understand the meaning of Generation better.

Strauss-Howe Generational Theory claims that there is a historical cycle<sup>13</sup> of age cohorts,<sup>14</sup> which they refer to as “Generation”, that have patterns of behavior that are in turn intertwined with the history of the United States before its independence from the United Kingdom (Tim Fernholz, 2017). These historical cycles are continual every 80 to 90 years and are divided into four stages, which give rise to four Generations that are repeated periodically (*Ciclos históricos* -

<sup>9</sup> Online Database, of Anglo-Saxon origin.

<sup>10</sup> The individual relates to another or others with whom the person is linked by something, as part of a social phenomenon.

<sup>11</sup> Spanish philosopher and author from the Generation of 14, known for his essays on the metaphysics of the human being.

<sup>12</sup> It is important to indicate that for Ortega y Gasset only two Generations could coexist at the same time.

<sup>13</sup> Temporary periods that have a lifetime limit and are repeated in a continuous loop.

<sup>14</sup> Set of people within certain parameters (age, didactic and formative experiences, interaction with the environment...).

*el impulso*, 2012; *Lifecourse Associates: Neil Howe, Bio*, 2015, *Toynbee | Historia cíclica*, 2015). The four stages or turns into which a cycle is divided according to Strauss-Howe typify as:

- **High:** Post-crisis turn. Civic values predominate, strong institutions and individualism is reduced.
- **Awakening:** In this phase, spiritual and personal autonomy increases, in which there is experimentation with utopian communities, such as the Great Awakening of the 18th century<sup>15</sup> (Frank Lambert, 1999; Giovanni Gómez Pérez, 2020).
- **Unravelling:** In this stage, the opposite situation occurs as in the first turn of the cycle. Individualism and personal satisfaction predominate over the feeling of community, creating small groups that block public action.
- **Crisis:** It is the last stage of the cycle, in which institutional life is destroyed and built up again, preventing the collapse of the nation.

In addition, Strauss-Howe, indicates the existence of four generational archetypes that occur in each cycle and share a series of attitudes, behaviors, and values. The terminology for each archetype is prophet, nomad, hero, and artist. Each of these archetypes lasts for 20 years on average (Lambert, 1999; Tim Fernholz, 2017).

- **Prophet:** Generation born at the end of a crisis and in a moment of social cohesion and power. The people who constitute this Generation give importance to morals and their principles.
- **Nomad:** Group born during the awakening stage, becoming pragmatic and resistant to the lack of protection and the social chaos around them.
- **Hero:** Generation born in an era in which individualism predominates. They are a generation that is more protected than the previous one. As young are optimistic people until adulthood, they consolidate as energetic people, with an exaggerated confidence and a high political power.
- **Artist:** Group born during the crisis period, where society proclaims the reconstruction of solid social institutions. This group receives parental overprotection due to the fear and concern developed by the uncertainty of the crisis. The artists offer a conformist and reflexive posture.

The problem with the theory developed by Strauss and Howe is that it does not consider specific parameters such as geographic location, race, technology and other social markers that affect generations (Tim Fernholz, 2017). This absence of information has forced us to reject this theory and look for other models. During researching information, we have found different positions regarding the size of the cohort of each Generation (Espinosa, 2020; Iberdrola, 2021b). That is why we have based our generational study on data provided by the Pew Research Center, thus having a constant consistency in our research (Pew Research Center, 2018a).

Pew Research Center's generational differentiation uses the age variable as the principal axis, defining six generational groups,<sup>16</sup> through their didactic and formative experiences, their interaction with the environment and their acceptance of innovations, as well as how each Generation is affected with respect to the previous generation over time (Pew Research Center, 2015).

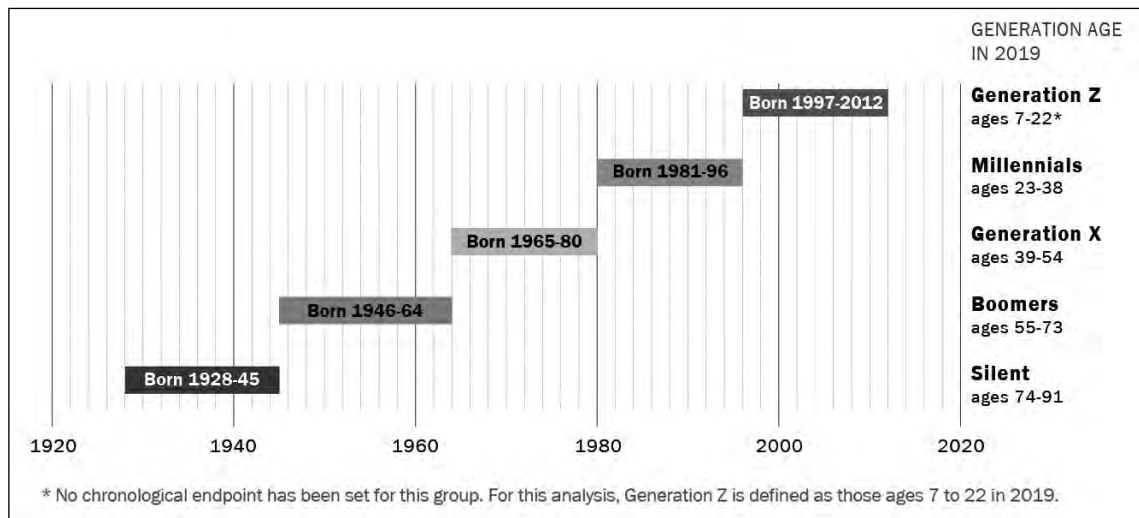
According to the Pew Research Center, there are six generational groups currently coexisting on planet earth: the Silent Generation (1928-1945), the Boomers (1946-1964), generation X (1965-

<sup>15</sup> Christian revival movement that spread throughout Protestant Europe and British America, bringing about a sense of divine revelation and salvation through Christ.

<sup>16</sup> For more information, see page 7.

1980), Millennials (1981-1996), Generation z (1997-2010) and Generation Alpha (2011-) (Pew Research Center, 2018; *The Whys and Hows of Generations Research* | Pew Research Center, 2017; *Where Millennials End and Generation Z Begins* | Pew Research Center, 2018).

FIGURE 11  
THE GENERATIONS DEFINED



Source: (2018) Retrieved from Pew Research on 10/01/2021, from (Pew Research Center, 2018b).

The factors used by PEW Research Center investigators to make generational differences are altered by Life Cycle effects, Period effects, and Cohort Effects (Pew Research Center, 2018a). First, we have the Life Cycle or Age Cycle, where analysts must consider the differences between the age of the generations and their position in the life cycle.<sup>17</sup> A “young” person will not have the same involvement in certain social aspects as an “older” person may have (*Significado de ciclo de vida (qué es, concepto y definición)*, Significados, 2018). An example of the differences between generations in the life cycle is that young people do not have the same interest in politics as adults (Llaneras, 2019; Olga R. Sanmartín, 2019; *Significado de ciclo de vida (qué es, concepto y definición)*, Significados, 2018; Zuil, 2021).

Secondly, we find the process of the Period effect. These impacts become visible when there are events, circumstances or social forces that simultaneously impact on all generations and usually have a long-lasting result on the entire population. Some examples could be a World War, an economic crisis... (Llopis-Goig, 2017). Third, we have the cohort effect. This refers to the unique historical circumstances that impact the members of a particular Generation. These impacts can occur because of historical moments that occurred before the emergence of the Generation or during a critical process in its life cycle when certain aspects of the person are in the process of development, such as its value system or personal identity (Allemand et al., 2008; Twenge, 2001; Vinney, 2019). By analyzing the effects of these factors on the Generations, researchers can understand the attitude of each group towards changes in the environment and the introduction of new technologies and innovations. Following the age-period-cohort model, six Generations are coexisting with different characteristics,<sup>18</sup> which will be explained as follows.

<sup>17</sup> A fundamental process in the life of an organism from birth to death. This process is divided into five stages: birth, youth, maturity, old age, and death.

<sup>18</sup> None of today’s Generations living together in the market have the same way of working, the same way of proceeding, or the same skills, the same knowledge, and neither do they share the same life circumstances.

#### 4.4.1. Silent Generation

The first Generation we found is the Silent Generation. This Generation is made up of. They are the predecessors of the Greatest Generation.<sup>19</sup> Currently, it is the longest-lived Generation, encompassing people born between 1928 and 1945 (Ensign, 2020). This group includes people over seventy born during the Great Depression of '29, the rise of Nazism and World War II (McIntosh-Elkins et al., 2007b). Its members grew up in an environment of war and crisis that inculcated in them an attitude of sacrifice and effort and a civic behavior always seeking to help the people around them and comply with the rules established for them. Other characteristics are their search for contact and intimacy with their family and friends, avoiding isolation and loneliness (Abadia, 2018; Nielsen, 2015).

In the work environment, they strive to do what is best for the organization, prioritizing what is positive for the group rather than for their benefit (Simón, 2007). This is because they have developed their personal and professional experiences in one of the most complicated scenarios, being one of the groups responsible for the most economic and social advances that have been achieved on the planet (McIntosh-Elkins et al., 2007a).

In the technological area they are the most backward Generation due to economic and social problems during their youth. It was not until their adulthood when the first technological devices began to be developed. The technological tool they use most often is television and radio, although they are increasingly getting into the world of smartphones with the help of their families (*Las 6 generaciones de la era digital*, 2017).

#### 4.4.2. Baby Boom Generation

The Baby Boomer Generation is made up of the Silent Generation (Pew Research Center, 2018a). This Generation includes all those born between 1946 and 1964 (*De mayores servicios sociales*, Imsero, 2016). The Baby Boomers are given this term due to the birth rate explosion and improved life after World War II (Fingerman et al., 2012).

This Generation undergoes great changes in the world during a period of economic and social stability, where optimism about their future predominates (de Mayores Servicios Sociales Imsero, 2016). They are attached to traditions and the past, showing loyalty, responsibility and commitment<sup>20</sup> (Watch & Act, 2019). In the work environment they show the same values, offering allegiance to their company due to the security and stability it provides in their lives. This Generation feels threatened by later Generations, although they consider them disrespectful of the world they live in (Chauvel & Smits, 2015). In contrast to their thinking towards future generations, they consider themselves along-haul generation, meaning that once they attach themselves to something, they do so with an intention of permanence, depositing their energy and trust (Fingerman et al., 2012).

In terms of technology, it is a generation that experienced many technological changes in a short period. The Cold War stands out (*Guerra fría: concepto, historia, causas y consecuencias*,

<sup>19</sup> Generation spanning from 1901 to 1927. A Generation with an extensive age cohort that lived a hard time in its childhood, coinciding with the First World War and that achieved its majority during the 1920s in the United States.

<sup>20</sup> They are descendants of the Silent Generation, which gave them the message of effort and sacrifice to achieve their goals. In addition, they are people who demonstrate responsibility and commitment due to their knowledge of the evolution they have had to reach their achievements. They have these values in mind because they had to develop in their lives with the absence of basic and essential elements for their development due to the scarcity of resources.

2021), with the arrival of the human being on the Moon, in 1969 (Jáuregui, 2020). This Generation that rejects new technologies at first, but adopts them once they are installed in the market. In addition, they are loyal to the technology brand once they find it useful (*Por qué las empresas de tecnología se están enfocando en los baby boomers*, 2021).

#### 4.4.3. Generation X

The term Generation X, was developed by Douglas Couplands<sup>21</sup> (*Douglas Coupland: libros y biografía autor*, 2021) in his novel *Generation X: Tales for an Accelerated Culture*<sup>22</sup> of 1991 (Twist & Newcombe, 2021). *La generación X esta formada por las personas nacidas entre 1965 y 1980. Son los hijos de la generación silenciosa y los primeros boomers* (Iberdrola, 2021b).

It is a transitional generation between the Baby Boomers and the following generations, marked by innovation and technologies (Ahn & Ettner, 2014; Parry & Urwin, 2011). It is a negative generation, in the shadow of the Baby Bombers and Millenials. They are also known as the Peter Pan Generation, which refers to the animated character from the Disney movie, based on the world created by *James Matthew Barrie*<sup>23</sup> (*Biografía de James Matthew Barrie*, 2021; *El origen de Peter Pan*, Mundo Funko, 2018). They are called by this term sarcastically, due to their pessimistic view of the world and their desire for free will and to evade their adult responsibilities. There is a sociological shift between Generation X and Baby Boomer, delaying all decisions that influence maturity. People become independent later, people get married and have children between the ages of 30 and 39. In fact, this is partly due to the adversities they encounter when they reach adulthood, where they are faced with a challenging reality, marked by economic instability and a complex labor market characterized by unemployment.

Their childhood is characterized by growing up in unstructured environments, due to women's access to the labor market<sup>24</sup> (Fernández, 2018; Murani, 2019). Thus, Generation X children grow up alone, giving them strong independence compared to individuals of previous generations. This independence reflects their quest for security, stability and protection of their descendants (Espina & Diciembre, 2006). This protection and are due to their fear of the future reality Reality that their children will have to face, so they seek to give them as many tools and resources as possible (Dannefer, 2017; Katz, 2017).

The introduction of women in the world of work is not the only social event that has marked the life of this Generation, but also the beginning of the process of globalization and the emergence of technology in both the personal and professional spheres (Lankford, 2019).

In terms of technology, they are the first Generation to have a desktop computer at home, observe the birth of the internet and live through the dotcom bubble of 2002 (*El día que la burbuja "punto.com" pinchó* | Economía | El País, 2010; *Generaciones y la tecnología: generación X: dos mundos bilingual*, Newspaper, 2017). Despite being the Generation that grew up with the rise of technology, their dependence on it is not as extreme as the following generations such as Generation Y, Z and Alpha.

<sup>21</sup> He is a Canadian writer (1961), famous for his science fiction novel *Generation X: Tales for an Accelerated Culture*. In his novels he often refers to how new technologies affect a society that is constantly evolving.

<sup>22</sup> Science fiction novel that tells the story of 3 Generation X friends, who face the new adversities of their Generation and the new social trends.

<sup>23</sup> Scottish writer, born in 1860 in Kirriemuir. His most famous work comes from the hand of his character Peter Pan in 1904, with the development of several novels.

<sup>24</sup> The introduction of women into the labor market is due to the rise of the feminist movement during the 1980s.