

*Corso di Laurea in Economia e Management*  
*Cattedra di Digital Ethics*

*The phenomenon of “Digital Divide”:  
Definition, Causes and Solutions for the new face of inequality.*

*Relatore:*

*Maffettone Sebastiano*

*Candidata:*

*Allegra Morelli*

*Matricola 259961*

*Anno accademico 2022/2023*

*Alla mia famiglia.*

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## Introduction

During the last decades our society registered an unstoppable and revolutionary technological transformation. Caradaica Mihail wrote in the “Politics and Knowledge: New Trends in Social Research” that from the moment the landline telephone spread amongst our world in the early 20th century, every aspect of our life has changed irreversibly. Although these inventions came as a booster for both the economical and communication’s sectors, they have also brought negative consequences on the way people were used to living. However, the author also stated that the visible and tangible outcomes could only be seen in the late 20th century, when another revolutionary invention took place, this was called the “Internet”<sup>1</sup>, in this new to the world scenario, the internet made the concept of the digital divide born for the first time. Indeed, these terms were used to identify the phenomena of the increasingly society digitalization, focusing on the division this was causing trough people, especially the ones who had access to the internet or any electronic devices and those who were out from the technology transformation. Nowadays, the digital divide is becoming one of the most dramatic issues of our world. Not only is the phenomenon increasingly damaging the socio-economic, political, and educational world’s sectors, but it is deeply exacerbating the existing inequalities between citizens in terms of social, financial or health inclusion. Moreover, this division are loudly tangible between people who lives in the most developed countries versus the ones who are banished in the underdeveloped and rural areas of the planet.

Taking all of this into consideration, this thesis will give the readers a complete framework of the phenomena creating an intensive journey with the purpose of investigating its numerous and hidden shadows. The following chapters will mark the different haul’s milestones to cover and represent the goals that need to be reached. The travel starts with the first one which illustrates the path the technology has followed during the decades, and introduces some of the most fundamental concepts which allow us to fully understand how the society is now experiencing this visible digital transformation. After having reached the first goal, the path will continue with the second chapter which, as a time machine, will take the readers in the past to allow them to understand where the Digital Divide’s roots started and, after a detailed definition of the phenomena, it will be further analysed in its different levels, types and causes. The third chapter, instead, has the aim to examine the plagues that have deeply afflicted our society so far, and can be considered simultaneously as the gas pedal able to exacerbate the digital divide or as unpleasant gap between people created by the phenomena itself. Finally, the last chapter will accompany the readers to the finishing line, it will help growing the awareness on how it is spreading amongst our planet, the consequences it is having on the world with a focus on the actual conditions in which the

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<sup>1</sup> “The Internet is one in a long series of information and communications technologies - from speech, to printing, movable type, telegraphy, telephony, radio, and television -that arguably influenced patterns of social inequality by destroying existing competencies and permitting early adopters to interact with more people and acquire more information over greater distances and in a shorter time”.

Indian people are currently living, compared with a more developed country such as Europe. It will also cover the several projects that have been done or the ones which need to be taken into consideration to bridge this issue and give to everyone the possibility to fully enjoy the benefits given by the digital transformation.

## Chapter 1

### *“The relation between humans and technology during history”.*

#### 1. *“The three orders of technology”.*

During the last centuries our society has registered a revolutionary change brought by the invention and consequent spreading of the internet and technologies resources. From the moment it first appeared in our society, every aspect of our life started to change irreversibly at such a fast pace that made people incapable of seeing the long-run consequences and involved only the privileged who were able to catch up with the same speed, leaving a great percentage of the population behind.

In order to deeply understand the weight, the technology revolution had and still has on our world, it is necessary to take some step behind and land in the epoque which registered the first technology revolution. In doing these analyses, is crucial to recognize the role the technology had in the past when it firstly rooted, how it has changed our life in this one-way revolution and focusing on the relationship between man and machines. Therefore, here is the need to take into consideration one of the most explanatory and enlightening book which thoroughly treats this topic: “the fourth revolution”, written by Floridi. The author pushes the readers to think about the term “technology” in a revolutionary way and analyse the multitude shadows that the term contains. Thanks to the use of different examples, he stated that the technology has always been present in our life since not only does the definition refer to the numerous devices, internet or artificial intelligence, which is the traditional sense of technology, but it can be used to identify every single object of our everyday life which enables us to do an activity or can be seen as the mean that allow us to reach our scope in doing general activities too. Starting from this assumption, is possible to introduced what is called the “three orders technology”, which properly divides the path followed by the technology during the centuries and the different human history’s stages and how it entered, or better, replaced the humans. Starting from the first order technology, Floridi explained it with a simple but clear example of a woman who uses a hat to protect herself from the sun. This example let him build the “first order technology” chain, which has three main characters linked together: the human, the hat, the sun. Obviously, there is the need to make this chain unpersonal and find more appropriated general terms. Apart from the human, which in an anthropological point of view, is at the first place of the chain, we have to find a universal term for the “hat”. The hat is simply the “technology” used by human for specific means, with the aim of protecting her from the sun, in that case. For what concern, instead, the “Sun”, in order to find a specific term is necessary to understand what its role is. Floridi, used the term “prompter” which can be defined as something that induce the invention or usage of a tool or an object to reach a goal. In that sense is possible to affirm that the sun is the prompter that induce the usage of the technology by a human. Indeed, the first order technology chain is composed of a human, a technology, and a prompter. We can say that the technology is “in-betweenness” the human and something that induce its usage.

Moreover, is essential to understand that the human is the one who chooses whether to use the technology and the prompter are always represented by natural element, the sun in our case.

This first revolutionary change took place in the middle period between the first-order technology and the second order technology. Infact, the second-order technology chain does not contain technology in betweenness a human and a prompter, but it changes the term “prompter” with another technology. In order to understand this dramatic change, Floridi gave us another example. Think about a person who uses a humble screwdriver. The screwdriver is not a technology whose invention was made possible by a prompter, because it contains an object that is collocated between the screwdriver and the prompter: the screw. In this sense, we can confidently affirm that the human is using a technology which contains another technology to reach a goal, which can be, for instance, make a whole in the wall. For that reason, the chain of the second order technology is now composed by a human, a technology, and another technology. “Second-order technologies are those relating users no longer to nature but to other technologies; that is, they are technologies whose prompters are other technologies”<sup>2</sup> stated Floridi. Another clear example of this are the keys, the humans use the key to unlock a locker, for example. The keys can be seen as a technology used to enable the human usage of another technology, leaving the natural prompter out of the chain. Much of late modernity gets its mechanical aftertaste from the preponderance of second-order technologies.

*“The London of Sherlock Holmes is a noisy world of gears, clocks, shafts, wheels, and powered mechanisms, characterized not just by the humanity–technology–nature relation but, more significantly, by the humanity–technology–technology relation. Modernity, as a prehyperhistorical stage of human development, soon becomes a world of complex and networked dependencies, of mechanical chain-reactions as well as locked-in connections: no trains without railways and coal, no cars without petrol stations and oil, and so forth, in a mutually reinforcing cycle that is both robust and constraining”.*

Although, in the second order technology we can still see the presence of the human in the chain, it is clear to understand that the technology is slowly worming its way and replacing the other characters. From the moment the technology starts developing exponentially from being in-betweenness technologies-as-users and after transforming into other technologies-as-prompters, in our society we are currently experiencing a technology–technology–technology scheme. In the third order technology there is not the presence of the humans anymore because the whole chain consisted of three technologies linked together. Focusing on the role of the humans, it is a shared belief that we are completely out of the loop, or better, on the loop. The technology replaced us and do not need our participation in doing its activities, the humans simply rely on or enjoy what the internet and the latest invention could offer to us. Essentially, third-order technologies are about removing us. Floridi said “In a defragmented and fully integrated infosphere, the invisible coordination between devices will be as seamless as the way in which your smartphone interacts with your laptop and the latter interacts with the printer”. Further examples include autonomous vehicles, like driverless cars, or ‘domotic

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<sup>2</sup> Floridi, L. (2014). *The Fourth Revolution: How the infosphere is reshaping human reality*, page 28.

appliances', the technologies that are transforming the house into a smart environment".<sup>3</sup>This makes clear that, while the second order relies on engine, the third order technology relies on ICTs, which can process data autonomously and at such a fast pace that only computer and algorithms can cope with it. Moreover, the fact that Technologies are users which interact with other technologies as prompters, through other in-between technologies, is also a way of providing further evidence that we have entered such a hyper historical stage of our development.

### ***1.1 The three stages of human life: Prehistory, History and Hyper history.***

From the moment that we have mentioned the hyper history stage, it is now fundamental to understand that the three order technologies cannot be fully understood without taking into consideration the stages of human development in which they found a fertile land to grow. Infact, the orders perfectly reflect three diverse stages that the previous humans have experienced. Indeed, Floridi divides the human history in: Prehistory, History and Hyper history. The division was made possible by the invention and development of the ICTs. Infact, the weight and importance of ICTs in different societies divided firstly prehistorical and historical ages.

Starting from prehistory, in that era the ICT's did not exist. Humans based their maintenance and development on different activities such as primary resources, agricultural and energy-related ones. Everything born and died in the same era, there was not the possibility to record and transmit information for future consumption. The end of prehistory and the entrance in the historical age was marked by the invention of new technological systems able to record and transmit events or lesson learnt from past generations to future ones. For instance, the bronze age, with the invention of writing can be collocated in the historical era.

Is fundamental to highlight that, during the historical age, humanity was related to ICT's and not dependent on them; this means that they used ICT's to record, transmit and use information as a form of enrichment of their culture which was able to give them the awareness of the society they were living in without making the technology over-taken other technologies such as energy-related ones, in terms of vital importance. They based their maintenance and development on other core activities and considered ICT'S as an additional value for their life. For instance, Floridi reported in his book the city of Ur, which was the Mesopotamian most developed country in the third millennia. The Ur is considered Historical because not only did they found their society on tangible goods, but they also had clay tablets which allowed them to record events. Nowadays, is still possible to find enormous number of documents such as: love letters, political documents, or holiday letters of that Ur. Most people are currently living historically or, as Floridi stated to be its synonym, in the Information age.

The transition from being related to ICTs to become dependent on them, marked the end of the historical age and the entrance in the Hyper story. A clear example of countries that are now experiencing the hyper

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<sup>3</sup> Floridi, L. (2014). *The Fourth Revolution: How the infosphere is reshaping human reality*, page 31.



story are the members of the G7<sup>4</sup>. They are considered to live in the hyper history since the maintenance and development of their society deeply depend on ICT's, on information-based technologies. Several surveys conducted on these countries have shown that the 70% of their Gross Domestic Production depends on intangible goods like information and data, and not on primary resources, energy-related or agricultural anymore.

The entrance in hyper history was made possible thanks to the different usage of the "Life cycle of information". The LCI includes different phases: create, collect, record, transmit, evaluate, usage. This tool helped us in completely understand the main differences between the three stages:

- Prehistory: ICTs did not exist.
- History: humanity was related to ICT's.
- Hyper history: society was dependent on ICT's.

In conclusion, prehistory and history work as adverb and tell how people were used to live, without giving further explanation on when or even where. It is necessary to include the hyper historical age in order to understand who we were, who we are and who we could be to have a complete vision of the human life.

## ***1.2 "The relation between man and machines".***

Taking all of this into consideration, is fundamental to understand that this phenomenon listed are not simply literary definitions, but concrete and radical changes that the humans are facing nowadays, overwhelming every aspect of the people's life, and bringing with them irreversible changes both positive and negative. It is clear to understand that the revolutionary changes that have occurred in the last centuries have brought with them tangible consequences on every aspect of our life. The aftermaths are several and difficult to be counted since, from the moment the technologies have rooted in our society, both the private and public sphere of have been affected by them.

Starting from the phenomenon of the machines replacing humans, there are clear evidence that show how technologies are completely overtaking the humans, for instance, in the increasingly minor power that people have in the work's sector. For instance, different hypothesis were released by students who concerned about the relation between technology and production. Braverman (1974) argued that capitalist firms seek to develop technologies that "deskill" workers: that permit firms to substitute unskilled operatives for workers with scarce craft skills to reduce wages and exert more effective workplace control. If this were the case, wage inequality would increase as unskilled jobs replace skilled jobs. In contrast, Paul di Maggio stated that the continual emergence of new technologies, ensured that skill levels in the labour force as a whole were stable or increasing, even as those for specific occupations declined. In contrast, other theories about to the relation between machine and workers, spread the belief that new technologies reduce inequality by generating demand for more skilled workers. There are three version of this argument. Firstly, some claim that new technologies upgrades which replace men with machine reduce inequality by

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<sup>4</sup> *Members of the G7: Italy, America, United Kingdom, China, Germany, France, Spain.*

substituting large number of unskilled workers with fewer better-paid and more-skilled ones. Second, points that machine will make workers more autonomous thus work more complex. And last one, released by Blau and Duncan stated that innovations enable early movers from modest backgrounds to achieve success in new occupations.

### **1.3 F. W. Taylor and the theory of “Scientific Management”.**

In order to analyse the role of the people in the workforce, it could be useful to make a comparison between the Taylor’s Scientific Management and the way people are currently doing their jobs.

Starting from the Scientific Management<sup>5</sup> is a theory also known as “Taylorism” after its pioneer, Frederick Winslow Taylor. It was one of the earliest attempts to apply science to the engineering of processes to management and analyses and synthesizes workflows with the aim of improving economic efficiency, especially labour productivity.

What was revolutionary about this theory was that Taylor recognised the importance of the workers in the production’s chain, promote the mutual responsibility to failures and wins on workers and managers and defined the two main goal of a good management: high wages and low labour costs. Moreover, to reach these two main achievements, every aspect of the management has to round about science, for that reason he stated the four underlying principles of the scientific management, which were:

- the development of a true science: all parts of job must be scientifically analysed.
- the scientific selection of the workers: The most suitable person for the job and each worker in the organization should have a clearly defined task.
- the scientific education and training of the workers: managers are responsible for planning, supervision, and proper training of the workers and they must reward when they accomplishes their task.
- cooperation between managers and workers: this means that Each worker should be given standard conditions and appliances that will enable him to perform his tasks and when a worker fails, he should know that he would share the loss.

Although the scientific management dictated a strict list of rules which made the workers being stuck in an unstoppable and complex chain of production where moment of stop was always denied in order to product more, faster and better, what is surprising is that the workers were seen as fundamental gears of the system. This exhausting way of working made the born of the first concept of technology possible.

Infact, this frenetic chain can be seen as a modern computer or general devices, in which the internal gears have a specific role and, in doing that, they do always the same procedures. Therefore, the first remarkable

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<sup>5</sup> The properly definition of it could be found in his book “Principles of scientific management” in which he stated that: “Scientific management is a system devised by industrial engineers for the purpose of serving the common interests of employers, workmen and society at large through the elimination of avoidable wastes, the general improvement of the processes and methods of production, and the just and scientific distribution of the product.” Taylor, F. W. (1911). The Principles of Scientific Management. New York, London: Harper & Brothers.

difference to highlight is that in the Taylor's point of view, the humans' labour force was essential for the development and growth for the country's economy.

#### ***1.4 Machines replaced Humans: what are the consequences?***

As soon as the First Industrial Revolution was working in the society in 1712, and from the moment it was powered by steam engine and electricity, the previous role of the workers was replaced by the machines. They were believed to be able to do most of the work autonomously or with a trivial human contribute, in a more efficient and rapid way. The industrial revolution, indeed, was responsible for the first great exclusion of the humans in the work sector, whose only means was to guarantee the correct use of the machine or control their work. As a natural consequence, the unemployment rate started to increase irreversibly, due to the fact that the industries could reach their goals without the need of several workers, and could replace their labour force with machines, which required a higher investment in the first period of the industries' life but higher profits in the long run, since they did not have to pay monthly salaries or invest in the apprenticeship of people, assuring them better results, higher percentage of products to sell in the market and a more precise and sophisticated level of skills in doing the activities they needed. Although, this could be seen positive for both the industries and the economy sectors of the countries, while these revolutions were rooting in the society, the population, families, and workers were profoundly damaged by the negative consequences brought by the phenomenon.

Firstly, the number of workers whose labour force became trivial were growing exponentially, this consequently brought with itself a series of other aftermaths linked all together. Infact, It is clear to understand that if an enormous percentage of people were not able to find a job, they would not receive any monthly salaries and, as a result, as the maintenance of families became more and more difficult, they could not afford products except the primary and basic essentials, this results in making the market registering an interruption since an increasingly minor percentage of people had a sufficient spending power. Not only did the unemployment rate rose, but also the born rate decreased since people could not afford the maintenance of any children. As a natural consequence, if the number of people who can find a job decreases, and they are not able to buy the available products on the market due to the lack of salaries, pace of production will decrease, and the speed of the market will register a harmful stop for both the people and the industries. Infact, the negative consequences could not only be seen on the workers perspective, but the replacement from humans to machines deeply damaged the industries too. They would have to face with an enormous number of products produced by the machine and remain unsold. As a result, the initial investment will not be re-gained by them and, there is the possibility, that they would face a critic period of crisis. Taking this infinitive chain of linked consequences into consideration, the question is: which can be the real benefits given by the replacement of the humans' workforce with the technologies if the power of the machine could not be exploited since the enormous amount of goods will remain unsold on the market? Finding the right answer is extremely complicated, since the pace the technologies are evolving and enter in our life is unstoppable. Both the industries and the people are not

able to catch up with such a fast pace. Moreover, the devices, the technologies and other invention like artificial intelligence, internet of things and blockchain are overtaking other traditional way of doing activities. For instance, Jay David Bolter in his book the “Turing’s Man” argues that the computer redefined man’s role in relation to nature, producing a change in way men and women in the electronic age think about themselves and the world around them. Moreover, the changes are visible in communication, education, politics, entertainment, and human communities too, and this was argued by Nicolas Negroponte in his bestseller “Being digital”. For that reason, different research has introduced the concept of “infosphere”, which is the current invisible cloud in which all the world is living in.

### *1.5 The concept of “Infosphere”.*

Focusing on the infosphere, the first philosopher who used this term was Floridi. He started his analysis affirming that the ICT’s are modifying our world as they are creating new realities and promoting an informational interpretation of every aspect of our world and our lives in it. Infact, it is necessary to recognise the differences between the real world of tangible goods, known as the “here” or the “offline” reality, such as analogue devices or carbon-based machines and the “there” reality, which is an online world characterised by digital technologies or silicone based activities. The development of new forms of realities people can enter and experience, made the threshold between the “here” and “there” become invisible, blurred, and scheduled to extinction. For example, “it already makes little sense to ask whether one is online space or offline when driving a car following the instructions of a navigation system that is updating its database in real time”<sup>6</sup>, said Floridi. The author, indeed, stated that the society is now experiencing a new form of life, nor online neither offline, but “On Life”. Moreover, since the infosphere is now absorbing every aspect of the life, it would become more and more difficult to remember what the world had looked like before its manifestation in the near future. For instance, the generation Z find hard to imagine a world where “Wikipedia” is not a synonymous of “encyclopaedia”<sup>7</sup> or a world without ‘google’, ‘tweet’, and ‘wiki’ not merely as services but as verbs. Floridi affirmed that they have no recollection of a world without Facebook being a social media because they born “on life”.

The most important aspect to highlight, which marked the passage from the past world and the entrance in the infosphere, is that the technologies are able to monitor, learn, advise, and communicate with each other. This create a new world composed of support-independent technologies where objects and processes are DE physicalized. This completely changed our everyday perspective on the ultimate nature of reality from a historical and materialist one, in which physical objects and mechanical processes play a key role, to a hyper historical and information reality. Because of the hedge between here and there is becoming increasingly invisible, the infosphere has not to be seen as another reality in which people can decide whether log-in or log-out, but it is the current world itself in which the population is already

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<sup>6</sup> Floridi, L. (2014). *The Fourth Revolution: How the infosphere is reshaping human reality*, page 43-44.

<sup>7</sup> Floridi, L. (2014). *The Fourth Revolution: How the infosphere is reshaping human reality*, page 44.

participating and cannot escape from. Moreover, we are what is known to be the “Inforgs”<sup>8</sup>, a term which combine the word “information” and “organism”. This new vision of the human, as informational organism, is another fundamental aspect that highlights the technology transition the world is facing, when even the humans have developed a genetical informational DNA. Nevertheless, our society and educational system still has to catch up with such transformations, infact, all the three orders technologies, the hyper historical era we are experiencing and the replacement of the real and tangible world with the planet of intangible and embodied resources of the infosphere is causing several issues. The most visible is the digital divide. From the moment the power of the people is now being measured on how they managed to be integrated in the new technological and virtual world, like in every other revolution registered during the human history, a variable percentage of people has always been left behind and marginated. This exclusion can be seen even in the virtual world. Infact, to enter in the hyper historical era, people need both the appropriate access and skills to enjoy this transformation, be fully integrated in the society and understand the real benefits that the technology has on the social, economic, and political sectors. Therefore, the development of the infosphere has generated a new form of social inequalities and has exacerbated the digital divide. In this sense Floridi affirmed:” the digital divide caused by the infosphere has created discrimination between those who can be denizens of the infosphere, and those who cannot, between insiders and outsiders, between information-rich and information-poor”.<sup>9</sup> The relationship between the digital divide and our current society creates a fertile land to deeply analyse this phenomenon. Therefore, as the digital divide is the heart of this thesis, The following chapter will illustrate this phenomenon in detail and examine its origin, causes and main consequences that our world is currently registering.

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<sup>8</sup> *An inforg is an informationally embodied organism, entity made up of information, that exists in the infosphere. These informationally embodied organisms are also called natural agents.*

<sup>9</sup> Floridi, L. (2014). *The Fourth Revolution: How the infosphere is reshaping human reality*, page 48,49

## Chapter 2

### *“Historical background and main causes of the phenomenon”*

#### *2. The phenomenon of Digital Divide: definition.*

In order to deeply understand which are the main reasons behind these unpleasant phenomena it is fundamental to analyse the definition of the digital divide. Infact, this phenomenon is not only a matter of who has access to internet and who has not, but Antonio Hidalgo, Samuel Gabaly, Gustavo Morales-Alonsoa and Alberto Urueña have stated that it has three different levels which cause inequalities:

- 1 The first level of digital divide was focused on connectivity.
- 2 The second level of digital divide was worrying about the development of skills and abilities required to use ICT.
- 3 The third level of digital divide was measuring the tangible results of the use of the Internet.

According to this division, the first problem regarding internet was accession. Despite the fact that we have registered a massive expansion of 3G, 4G and 5G networks and experiencing an enormous mass market of electronic devices, in terms of access to the Internet, Manuel Castells was developing an argument in this regard, saying that the digital divide, “in terms of access to the Internet, will be mainly the concern of the poorest, most discriminated segment of the population-thus furthering their marginality”<sup>10</sup>. Then, while broadband and mobile connectivity have spread and the internet access had increased, Caradaica concerned about the fact that the issue of skills would be the next threshold. Infact, the lack of the Digital skills compromises the competencies of individuals that allow them to take advantage of the use of new technologies and, as a result, they are not able to understand the real benefits given by the technologies. Because these competences are not present in the same way among all the population, this concept must be integrated into the analysis of the digital divide, and it is known as the “digital literacy”. The last level of the digital divide, enable us to understand who the winners and the losers of the digital divide thanks to the multitude of studies and analyses of the people who are use the internet. What is more frightening is that all levels of digital divide can manifest both at national and international level. While developed states are currently working in order to provide access to internet as much as possible and to invest in digital education, the situation is not the same for underdeveloped countries where, because of a lack of both money to invest in new technologies and resources, the technological gap between the Global South and Global North is increasing exponentially.

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<sup>10</sup> Castells, M. (2001). *The Internet Galaxy. Reflections on the Internet, Business, and Society*. Oxford, University Press, New York. Page 254.

Manuel Castells observed, since 2001, that the global economic, social, and political arrangements are “simultaneously increasing wealth and poverty, productivity and social exclusion, with its effects being differentially distributed in various areas of the world and in various social groups”<sup>11</sup>. “And because the Internet is at the heart of the new sociotechnical pattern of organisation, this global process of uneven development is perhaps the most dramatic expression of the digital divide.” Moreover, because of the different events which have affected our society in the last years, the way government treat the digital divide changed, the entire planet understood that this phenomenon requires urge interventions to be bridged. The reasons behind this more and more seriousness people are treating this problem can be linked, for instance, to the years of Covid-19. Indeed, the pandemic came as a gas pedal for the technological advancement and simultaneously highlighted the tragic inequalities between people all over the world, that’s why the digital divide is now being seen as dramatic as any other rooted world’s problem such as war, famine, climate changes and environmental disasters, due to the fact that technology is a key element to a country’s economic development and it cannot be left behind. During the last decades, many researchers have tried to build the correct and complete definition of the digital divide, in doing such a complex assignment they felt the need to seek for the spread roots of the term, infer the hidden shadows behind its usage where it first appeared and gather the several meanings all together. Nowadays, we have a common shared definition of the phenomenon, but it remains pacific that the “digital divide” can be defined as a “moving target” concept which does not derive from some univocal and homogeneous origin, but it is originally and persistently plural.

Starting from this assumption, the digital divide is the unequal access to digital technology, including smartphones, tablets, laptops, and the internet. The digital divide creates a division and inequality around access to information and resources In the Information Age in which information and communication technologies (ICTs) have eclipsed manufacturing technologies as the basis for world economies and social connectivity, people without access to the Internet and other ICTs are at a socio-economic disadvantage, for they are unable or less able to find and apply for jobs, shop and sell online, participate democratically, or research and learn.

### ***2.1 The Pioneers of the terms “digital divide”.***

The term digital divide was originally used in the 1990s to describe the gap between early adopters of computer technology and those people who had no interest in learning about computers. In some media coverage, the term was applied to businesses, as well as individuals. The metaphor became popular in the media during the mid-1990s when the U.S. Department of Commerce published a research report called “Falling Through the Net: A Survey of the ‘Have Nots’ in Rural and Urban America”. In November 1994, the Current Population Survey included questions on ownership and usage of computers and modems in

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<sup>11</sup> Castells, M. (2001). *The Internet Galaxy. Reflections on the Internet, Business, and Society.* Oxford University Press, New York, p. 265.

addition to its customary questions on telephone "penetration." Data from this survey were cross tabulated according to income, race, age, educational attainment, region, and geographic category (rural, urban, and central city) to create a profile of those not connected to the National Information Infrastructure. Overall, the survey demonstrated that the poorest central-city households whose incomes were less than \$10,000, had the lowest telephone penetration and about the 80%. Instead, the ones who had the lowest computer penetration, about 4.5 percent, were rural poor and, among households with computers, were least likely to have a modem. Regarding racial categories, the rural Native Americans had the lowest telephone penetration (75.5 percent), while rural Blacks had the lowest computer rates (6.4 percent). Taking into consideration the usage of online services, minority groups surpassed Whites in percentage of classified ad searches, taking courses, and accessing government reports. Another factor that the survey considered was the distinction of ICTs usage between different age group; the survey revealed that telephone penetration was lowest among the youngest rural households, while computer penetration was lowest among rural and central-city seniors and the youngest rural households. The report revealed widespread inequalities in national ICT access, with migrant or ethnic minority groups and older, less-affluent, and less-educated people living in rural areas being especially excluded from Internet services.

## ***2.2 Historical background.***

The historical roots of the digital divide can be found in Europe during the early modern period when the gap between those who could and could not access the real time forms of calculation, decision-making and visualization offered via written and printed media increased exponentially. Within this context, different thinkers such as Mary Wollstonecraft, Immanuel Kant and Jean Jacques Rousseau raised fundamental ethical discussions regarding the relationship between education and the free distribution of information through the population. These ideas of equal distribution created a fertile land for the following thinkers; indeed, the latter advocated that governments should intervene to ensure that any society's economic benefits should be fairly and meaningfully distributed. The forerunner of the digital divide concept was certainly Rousseau who introduced the idea of "universal services" during the Industrial Revolution<sup>12</sup>. Later when telegraph and postal systems evolved, many used Rousseau's ideas to argue for full access to those services, even if it meant subsidizing hard to serve citizens. The revolutionary ideas of Rousseau found application after many years in different articles and publications where the term Digital Divide first appeared. Focusing on the history of the term, a widely spread belief is that the term was invented by the department of commerce's national telecommunications and information administration (NTIA) who firstly made this term appeared in the report "Falling through a net: defining the digital divide". In fact, finding the original roots of this term has always been difficult and confusing. The one who tried to build the history of the chronological appearance of the term digital divide was David J Gunkel, who wrote in an article called

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<sup>12</sup> *The "universal services" is an economic, legal, and business term used mostly in regulated industries, referring to the practice of providing a baseline level of services to every resident of a country and thanks to Rousseau's idea, he was able to justify poor laws that created a safety net for those who were harmed by new forms of production.*



“second though: toward a critique of the digital divide” the term was not invented by the NTIA but only inherited. Infact, the commerce’s assistant secretary for communications and information provided a candid explanation of this in a post to the Benton foundation’s digital divide discussion list, in which he explained that the inventors of the term were Jonathan Webber and Amy Harmon who first used the term in LA times in 1996 to describe the social division between those who were very involved in technology and those who were not. It is clear to understand that the NTIA can only be seen as the catalysts for the popularity, ubiquity, and redefinition of the term. Other research also stated that considering Harmon as the inventor would not be correct, because before 1996 the congressman Ed Markey of the Clinton-gore administration and the New York times reporter Gary Andrew Pole had used this expression to name a gap in educational opportunities. Moreover, the Andy Carvin of the Benton foundation cited the book “the emperor’s Virtual Clothes” by Dinty’s Moore since it contains one of the earliest occurrences of the phrase. Furthermore, what made even more difficult the definition of the term, was that every writer or reporter gave a personal significant to the term and, consequently, the definition of the term is not homogenous or univocal. For example, Harmon employed “digital divide” to define the gap between those who are deeply suspicious of a new generations of engineering solutions to the world problems and those who insist that the living would have got better with technology and science. Vice president Al Gore used it to highlight the differences between people who have access and people who do not in K-12.

### ***2.3 The Telecommunication act of 1996.***

The term found another application in the late 1996 in the Telecommunication act. Given by the different report during those year the concerning about the fast pace spreading of digital divide were increasing, for that reason in 1996, as telecommunications companies merged with Internet companies, the Federal Communications Commission<sup>13</sup> adopted Telecommunications Services Act of 1996 to consider regulatory strategies and taxation policies to close the phenomenon. As reported in the original paper of the Act, the commission mainly focused on three different causes of the digital divide: availability, affordability, and access.

Moreover, the publication of the telecommunication Act of 1996 came as an alarm for the rest of the globe and made the topic soon moved onto a global stage since other countries felt the urge to close that phenomenon. A clear example of this was the World Trade Organization (WTO) which passed a Telecommunications Services Act, which resisted regulation of ICT companies. In 1999, the WTO hosted the "Financial Solutions to Digital Divide" in Seattle, US, co-organized by Craig Warren Smith of Digital Divide Institute and Bill Gates Sr. the chairman of the Bill and Melinda Gates Foundation. Craig warren said: “Closing the Digital Divide is not just about giving to the poor the benefits of the rich. It is about creating a more equitable and balanced world economy.”<sup>14</sup> Another year to bear in mind is the 2000, when US

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<sup>13</sup> *The Federal Communications Commission regulates interstate and international communications by radio, television, wire, satellite, and cable in all 50 states, the District of Columbia and U.S. territories. An independent U.S. government agency overseen by Congress, the commission is the United States' primary authority for communications law, regulation and technological innovation.*

<sup>14</sup> *"WTO briefing note: Ministers start negotiating Seattle Declaration". World Trade Organization. 1 December 1999.*

president Bill Clinton mentioned the term in the State of the Union Address with the aim of bridging the digital divide by ensuring that every child is technologically literate by connecting every classroom and library to the Internet.

#### *2.4 Digital divide as a “moving target”.*

In the end, the digital divide has hanging denotation because as companies advises, it is a “moving target”. This plurality has at least two consequences: first, there is not one digital divide, there is a constellation of different and intersecting social, economic, and technological problems, all of which are properly named “digital divide”. Second, as David J. Gunkel stated, it has changed because the technology has changed considerably. These changes are evident in the three reports published by NTIA. Indeed, the first report considered the digital divide focusing on the ownership of devices by the people; in the second report, the concept of “internet access” was incorporated. In the middle period between the second and third publication, the internet was recognized as one of the fundamental technologies and, as a consequence, the third report addresses “which Americans households have access to internet, and which do not. In this way, the object of “digital divide” was updated from the time of the first report to adapt to changes in technology.

#### *2.5 Different levels of the phenomenon.*

Starting from the assumption that the term “digital divide” is irreducibly plural and consistently flexible, it is clear to understand that it is possible to identify different types and level of this phenomenon. In particular, numerous researchers stated that the main levels are three, as follows:

- The first level of digital divide is known to be “the global digital divide”. It deeply analyses the weight of the phenomenon on the different countries of the globe focusing on the correlation between the strength of the digital divide and the level of development of states. Apart from the fact that every single context requires a specific analysis, most of the times the global digital gap depends on the spending power of the individuals, since it is one of the fundamental variables which influences the degree of the access to both the Internet and the ICT technologies. Furthermore, the global digital divide, with its definition, can be strictly linked with the concept of knowledge divide. Several studies have demonstrated that due to several factors, such as social, economic, or political, the degree of digital level deeply increase or decrease if we consider it at a national or international level. What further exacerbate this knowledge gap between countries is that more than half of the broadband connections of the world is held from China, USA, and Japan.
- The second level of the digital divide is named “the social digital divide”. It refers to the existing inequalities of the country and how the phenomenon contributes to bridging or exacerbating the gaps. The second-level digital gap, instead, is related to the people marked by a high level of technology education which enable them to become the so-called prosumers, who are the ones

who can create the user generated contents. Obviously, these capacities are more likely to be exploited, and they are more encouraged to take part to the creation of contents, if the people possess a high education level and a conspicuous degree of spending power. However, several evidence have shown that the percentage of the users who participate to the creation of memes or wikis is limited compared to the total number of Internet users. Moreover, several studies have demonstrated that the society is split into two different groups of people: the ones whose competencies are so high to become part of the creator of the technology, and the other half of citizens who lack from the basic virtual interactions on the Internet. For that reason, the analysis of the digital gap is mostly based on insufficient computer competences and on the causes that generate this deep gap. Researchers are confident to state that the main reason hidden behind this struggling social issue can be linked to the lack of the infrastructures and technologies necessary to guarantee them an effective web surfing. Recently, the jurisprudence has acknowledged the existence of a “damage caused by the digital divide”; this phenomenon may be caused by an external party who violates the right of another individual to access the web. Consequently, the individual is prevented from exercising his/her rights on the Internet. This type of offense may be classified as a damage to a human being because it implies the lack of digital inclusion.

- The third level which comes under the name of “the democratic digital divide”, bases its studies on the citizens’ usage of new technological devices and systems to understand if the use or the impossibility or unavailability of technologies could affect their level of participation and integration in the political and social activities.

### ***2.6 The three types of Digital Divide: Access divide, Use divide, Quality of use divide.***

Apart from the three different levels of digital divide, not only is the plurality of this phenomenon tangible in its different meanings and levels, but it generates three different types of digital divide too. Infact, the digital divide was initially attributed to underdevelopment of the countries and was perceived as something temporary that would disappear with the popularisation of technology. Instead, the divide persists today despite the mass marketing of electronic devices with Internet access and the causes can range from the high price of the above-mentioned devices to the lack of knowledge about their use or the lack of infrastructure for their access. In this regard, we review the types of digital divide:

- Access divide. The first type of digital divide refers to the possibilities that people must access this essential resource. From this point of view, researchers find fundamental to analyse the existing socio-economic differences between both people and countries, since digitisation requires very costly investments and infrastructure for less developed regions and for rural areas, these variables play a crucial role in determine the people’s possibility to have access to these technologies and catch up with the digitalisation of the society.

- Use divide. It refers to the lack of digital literacy, which is the people's process which enables them to gain the digital skill and truly understand the social, economic, and political benefits given by these resources. In this regard, and to give an example, the ITU points out that there are 40 countries in which more than half of their inhabitants do not know how to attach a file to an email.
- Quality of use gap. Another type of digital divide is the one which examines the level of management and quality of the use of internet by people. Researchers have demonstrated that the people who have digital skills usually are not able to manage the technology properly, therefore, they cannot find their way around the internet since the lack of quality in the use of the resources enabled them to make good use of and get the most out of it. For example, about access to quality information, having a high degree of digital skills but lacking from the critical sense that permit to choose only the sincere information, might be harmful for the people. This type of digital divide deeply increased during Covid-19. In fact, during the pandemic years, the greatest percentage of people from every corner of the planet was continuously updated with what was happening around them by news, information, articles. Many people had access to an enormous amount of information and all our devices were overwhelmed by covid-19 news. However, this uninterrupted on-line life has controversial aspects; on one hand, having the possibility to access to different kind of information made the people aware of the gravity of the situation the world was facing, and this made us more responsible and attentive with ourselves and with the community in general. On the other hand, instead, the multitude of information available on the internet needed a careful selection. The panic and the fear spread of internet with fake news made people fall in critical state of mental disorientation. This is a clear example of quality of use gap, because even though people had access to internet, lacking from the capacity to distinguish the different data the technology contains, deprive people to make a right management of this both powerful though harmful weapons. To take track of this quality gap, A few years ago, ITU established the Digital Access Index (DAI), which measures the overall ability of a country's citizens to access and use ICT. This index considers various variables grouped around five categories, which are as follows: quality, infrastructure, knowledge, accessibility, and use.

### ***2.7 Theories of Digital Divide: Technological determinism, sociocultural determinism, and volunteerism.***

The digital divide was initially attributed to underdevelopment and was perceived as something temporary that would disappear with the popularisation of technology. Instead, the divide persists today despite the mass marketing of electronic devices with Internet access. The data shows the technological gap that separates some countries from others, even though 3G and 4G networks, while awaiting the massive expansion of 5G, are already reaching almost every corner of the planet. In order to find the main causes

hidden behind the phenomenon of the digital divide, it is important to first distinguish between access to the Internet and what is known to be the “digital literacy”, which is a concept that stands for the learning process that enables a person to acquire the skills to understand and benefit from the educational, economic and social potential of the new technologies. Both the access to internet and the lack of digital skills can be seen as causes of the phenomena and other causes can be range from the high price of devices to the lack of knowledge about their use or the lack of infrastructure for their access. However, before taking into consideration the most visible causes, it is fundamental to analyse another theory that is responsible for both exacerbating and enlarge the gap between people in terms of access to internet.

### *“Technological determinism”.*

During the past decades, several researchers and philosophers asked themselves about which could be addressed as the main causes of the digital divide. In doing this analysis, David J. Gunkel stated that a common and shared belief is that the causes of this phenomena and the effect of it in the social sphere to be posed in terms of “technological determinism”. The introduction of this concept must be addressed to Chandler. According to him the technological determinism view is a technology-led theory where the technology is seen as the “prime mover” in history which is the sole or prime antecedent cause of change in society. This formulation of a causal connection between technology and so is usually credit to the American sociologist Thorstein Veblen. Another researcher who gave its consideration was Charles Horton Cooley who said: “nothing can be understood without perceiving the manner in which the technology radically revolutionized the communication and created a new world for us”.

Moreover, the technological determinism has also developed into two subjects called “hard” and “soft” determinism. The first one, “hard determinism” makes technology the sufficient or necessary condition for social change, while the “soft determinism” considers technology to be a key factor that facilitate the social changes. In the discussion and debates concerning the digital divide, it is possible to find the two subjects too. In fact, the technologies involved in the digital divide era are assumed to effect socioeconomic opportunity and success, and this is a “hard determinism” point of view. A softer approach, instead, suggest that information technology may contribute to social transformation. Even though discussion regarding digital divide often employs elements of technological determinism to find its causes, David J. Gunkel illustrated in his article that this theory remain controversial for two main reasons. The first one is that the technological determinism is refuted by other two theories: the “sociocultural determinism” and “volunteerism”.

### *“Sociocultural determinism” and “Volunteerism”.*

For what concerns the sociocultural determinism, in the diagnostic phase made by the NTIA to find causes of digital divide, studies find that access to, and use of IT, is dependent on social and economic conditions. For instance, the NTIA, discovered that geography is an important factor in defining the divide between information haves and have-nots, and race is a significant element and the NTIA argued that the digital divide can be seen as a “racial ravine”. Moreover, in the 2000 Forrester brief penned by Ekaterina Walsh, discovered that the “personal income” is a primary factor that causes the digital divide. It is clear to

understand that this study has shown that the social, cultural, and economic opportunities play a constitutive role in determining the level of one's access to and ability to use IT.

The other mentioned theory is the "volunteerism". The perspective of volunteerism introduced additional complications. Starting from its philosophical definition, volunteerism "emphasizes an active agent's individual freedom to choose between competing alternatives". For this reason, this concept has been employed by humanists, existentialists who insist that people are active agents and not helpless automatons, determined by sociocultural or technological circumstances. An author who mentioned the concept of volunteerism was Graff in the "Labyrinth of literacy" who said: "neither writing nor printing alone is an agent of change; their impacts are determined by the manner in which human's agency exploits them". That theory fit perfectly with the digital divide and help the researchers discovering that the world is not only divided into information have and have-nots, but also in information want-nots or even internet dropouts. Infact, these two terms are used to identify those people who are voluntary non-participants of the technological era even if they have the skills or devices that permit them the entrance in this revolution, or to people who had access one time and decide against continued use.

Apart from the theories of sociocultural determinism and volunteerism, the second reason that made the concept of technology determinism controversial was the fact that technology has to be seen as a force for positive and negative social change. Jacques Ellul, for example, said that technology is not necessarily a progressive force, but also produces new sociocultural conflicts and uncertainties. Another author that expressed his opinion was William Gibson who said:" the street finds its own use for things"<sup>15</sup>, with this enlightening sentence, the writer want the people understand that the one of the main causes of the digital divide can be find in the fact that technology is often employed in ways that deviate from its intendent or projected original use causing a dissonance between the projected social impact attributed to a particular technology and the actual effects that are observed to follow from its development and proliferation.

Taking all of this into consideration, it is clear to understand that over the past decades' different authors, writers, existentialists, and philosopher developed theories which can explain the gap that is currently dividing the population into two different sections and leaving an enormous percentage of people out from the society. The theories exposed are the technological determinism, the sociocultural determinism, and the volunteerism. Although they refer to defend aspects of the phenomenon and all relevant at the same level, the causes that are going to be deeply analyse, since they most visible and tangible in our current society, are the one related to the lack of digital literacy of people, the high prices of the devices and the lack of infrastructure for their access.

## ***2.8 The main causes: Infrastructure.***

One of the main causes of the digital divide can be find in the lack of infrastructure that affects several countries all over the world. The term "infrastructure" stands for the enormous quantity of different

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<sup>15</sup> Gibson, W. (1993) 'Academy Leader', in M. Benedikt (ed.) *Cyberspace: First Steps*, pp. 27–9. Cambridge, MA: MIT Press.

devices released in the past decades and the total range of different mediums built what is now known to be the “internet of things”<sup>16</sup>. Although it could seem unbelievable for those countries who are already experiencing the hyper historical era not having a mobile phones in their pockets or a series of laptops in both their houses or offices, since they have become a fundamental aspect of our lives, an extension of our self and something impossible to get rid of since they are the means that make people do every activity, there are still some part of the world, mostly the underdeveloped ones, who barely have the awareness of the existence of this goods. In this marginated and excluded corners of the planet, the citizens are still experiencing the historical or even the prehistorical stage of humanity. Therefore, humans are used to do their life’s activities without any mediums which allow us to take part of the current society we are living, leaving them behind an imaginary hedge that enabled them to catch up with the pace with which our society is transforming itself from living offline to living, as floridi said, “on life”. For these reasons, the lack of infrastructure is considered to be one of the main cause of the digital divide, a factor that deeply exacerbated the existing gaps that already affects the underdeveloped countries, in every aspects of their life such as the economic, political, social and educational sectors. At this point is clear that the infrastructure are the mediums by which individuals, households, businesses, and communities connect to the Internet. To deeply analyse how the lack of infrastructure affects the digital divide, we must take into consideration the different studies and surveys done to take track of this cause. Traditionally, the nature of the divide has been measured in terms of the existing numbers of subscriptions and digital devices. Firstly, the common and shared belief was that with the time passing by the digital divide caused by the lack of digital mediums trough the people who lived in particular areas would have been closed as the result of a natural ad almost automatic process. Contrary, despite the fact that most recent increase in digital equality stems from the massive diffusion of the latest digital innovations methodologies such as fixed and mobile broadband infrastructures and fibre optics, different surveys have showed that persistent lower levels of connectivity are currently affecting specific categories of people, mostly the women, racial and ethnic minorities, people with lower incomes, rural residents, and less educated people, this surveys can be defined as evidences that addressing inequalities in access to and use of the medium will require much more than the passing of time. Moreover, instead of taking into consideration the existing numbers of digital devices amongst people as the leading variable for conducting the research, recent studies have measured the digital divide not in terms of technological devices, but in terms of the existing bandwidth per individual.

#### ***Tracking the lack of infrastructure: Broadband and digital subscriber’s line.***

Firstly, it is fundamental to understand what the broadbands and the difference are between these technologies and the DSL, which stands for “Digital subscribers line”. Starting from the broadbands, the Geeks for geeks online platform defined the Broadband connection as a “technology which refers to transmission of wide bandwidth data over a high-speed internet connection”. The connection medium

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<sup>16</sup> *The internet of things is a concept composed of all the different devices a person can simply find on the market nowadays such as computers, mobile phone, tablets, MP3 or laptops.*

can be made by optical fibre, radio, twisted pair, coaxial cable. It can be considered as a superset which refers to any high-speed internet technology where the signal to and from a device happens through a traditional telephone line or a dedicated broadband cable meant for internet connection. For what concerns, instead, the DSL, it can be defined as a subset of broadband and specifically a communication medium used to transfer digital signals over standard telephone lines. After having defined these two innovative means for internet connection, it is possible to focus on the main points of the analysis. Therefore, the studies conducted have shown that the digital divide in kbit/s is not monotonically decreasing but re-opens with each innovation developed. For example, during the late 1990s there was a massive diffusion of narrow-band Internet and mobile phones, these innovations increased the phenomena of digital inequality more than before their existence. Another evidence was given by the introduction of broadband DSL and cable modems during 2003–2004 increased levels of inequality. Moreover, during the late 1980's, when only fixed-line phones existed, the digital gap was obviously higher compared to the late 2000's, when communication capacity started to be more unequally distributed.

A clear example of this can be found in the studies conducted in the USA in the late 1990's, when the Fixed and mobile providers continue to make impressive gains in bringing high-speed broadband service. The results of the surveys conducted on the Americans to take track of the relationship between the innovations spread and the people, were reported in the Telecommunications Services Act of 1996. In particular, the commission fixed a benchmark of minimum Mbps the people should have been provided, which was about the 25/3 Mbps, and the number of Americans living in areas without access to at least 25/3 Mbps has dropped from more than 18.1 million Americans at the end of 2018 to fewer than 14.5 million Americans at the end of 2019, a decrease of more than 20%.<sup>2</sup> Moreover, more than three-quarters of those in newly served areas, nearly 3.7 million, are in rural areas, bringing the number of rural Americans in areas served by at least 25/3 Mbps to nearly 83%. Luckily, in the period between the 2016 and 2019, the gap between rural and urban people registered a rapid decrease and the percentage of rural Americans with access to 25/3 Mbps fixed broadband has been nearly halved, falling from 30 points at the end of 2016 to just 16 points at the end of 2019.

## ***2.9 Location.***

An intrinsic cause to take into consideration while seeking for reason that can hide behind the digital divide, is certainly the location where people live. Infact, starting from the assumption that a person can easily connect to the internet in a huge variety of different locations, such as homes, offices, schools, libraries or public spaces which provides a free connection, levels of connectivity often depend on the areas a person is located. Several surveys have demonstrated that the highest gaps in connection are extremely evident and tangible between rural, suburban, and urban areas. Based on location, it is fundamental to highlight that, even though surveys have demonstrated that the rural areas are the most affected by the digital divide phenomena, both the rural and urban side experience the gap for different reasons. Therefore, the analysis has to examine this areas both contemporary and separately.



### *Urban and rural areas.*

Starting from the urban areas, it is clear to understand that the most developed and central city of the world, thanks to their location, are the first to be reached when innovations and new technologies are developed, since they are easier to be reached. Additionally, since the terms “most developed” are usually equivalent to “richest”, this richness allows them to have the newest and performing infrastructure able to support those innovations, making the urban people fully enjoy the technologies without any impediments. The key challenge with urban adoption rates for broadband is that many households choose not to have it even if it is available and the lack of digital literacy. In particular, For what concern the personal volition to be not connected, The bulk of broadband non-adopters claim they have “no need” or “no interest” in getting it. The lack of “digital literacy” , instead, is a personal condition which prevent less educated people understanding what are the real benefits the technologies has on different aspects of their life such as society, economy or politics, and due to the fact they lack of skills to fully enjoy the internet, they could become voluntary non-adopters of it, so the reasons are intrinsically connected, but this two main points will be further analysed in the next paragraph.

Going back to the division between rural and urban areas, it is clear to understand that every country contains itself both a central and peripheral side, and even though they could be very close to each other, the people’s conditions and ways of living could be diametrically opposite. Indeed, the rural areas of the world, are the one who are currently suffering the most the digital divide phenomena, and the reasons why they have always been more affected by the gap are several. First and foremost, the marginated lands in which they are located are often very difficult to be reached by every kind of connection, or most of the time the speed of it may be so slow as to be virtually unusable. Another factor that prevents the rural-people catching up with the speed of technologies could be found in the lack of money to be invested in the appropriate infrastructure. This condition of poorness, prevent them having devices such as mobile phones, televisions, tablets, leaving them marginalized from the society. For instance, to download 5 GB of data in Taiwan it might take about 8 minutes, while the same download might take 30 hours in Yemen.

Furthermore, in conducting this analysis, it could be erroneous to underrate the role of the government. Different surveys conducted about the rural-urban divide have shown that an aspect able to worsen this gap can be linked with the policies about privacy, data governance or speech freedoms people must respect. These restrictions make it challenging for technology companies to provide services in certain countries and, most of the time, these strict rules affected specific categories of people such as the women or households who can be locked into a specific service provider, since it may be the only carrier that even offers service to the area. In numerical terms, there are numerous evidence that show this phenomenon clearly.

One of the most relevant is the white paper the “urban Unconnected” published by the Wireless Broadband Alliance<sup>17</sup>, which took into consideration the eight countries with the world’s highest GNP<sup>18</sup> and demonstrated that people with no internet connection were about 1.75 billion, and only one third of them lived in the major urban centres. For instance, the city of Delhi registered a total of 5.3 million people that lack of any connection, about the 9% of the population, São Paulo had 4.3 million people without internet access, which is equivalent to the 36% of its all citizens. And still, 1.6 million inhabitants of New York were affected by the gap and finally Moscow, where the people leaving behind the society were 2.1 million, the 17% of the population. Moreover, as the time passing by the conditions have not got better. Indeed, in 2021 other surveys have demonstrated that only about half of the world's population had access to the internet, this means that an impressive and huge number of people, about 3.7 billion live without internet.

### ***2.10 Skills and digital literacy.***

Nowadays, thanks to the deep and numerous studies conducted to find causes and solutions to bridge the digital divide, it has become a common and shared belief that this phenomenon should not be only seen as a matter of access to the internet and cannot be alleviated merely by providing the world the necessary equipment. Researchers done in the late 1990’s have stated that there are at least three intangible and personal factors that play a crucial role in exacerbating the existing gap between people. These factors must be addressed to the society’s lack of knowledge on how to make use of the information and communication tools once they exist within a community, and they are known to be: information accessibility, information utilization, and information receptiveness.

The properly term used to refer to people who do not have the sufficient digital skills is the lack of “digital literacy”. Starting from its definition, the United Nations Educational, Scientific and Cultural Organization (UNESCO Institute for Statistics) defines the digital literacy as follows:

*“Digital literacy is the ability to define, access, manage, integrate, communicate, evaluate and create information safely and appropriately through digital technologies and networked devices for participation in economic and social life”.*

We can clearly understand how fundamental is for people, in our current digital society, to have such skills, since the lack of them is believed to prevent people to have the key set of competences needed for personal development, social inclusion, active citizenship and employment. Nevertheless, researchers conducted during the late 2010’s, have shown that the percentage of people who lack of digital skills for their location, financial conditions or issue related to their country’s educational systems, was extremely high and, as a result, despite the fact they were living in the society’s transitional years, they did not have the possibility to catch up with the pace of such digital transformation. Clear evidence of this is a survey

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<sup>17</sup> *The-Urban-Unconnected\_White-Paper.pdf (wballiance.com)*

<sup>18</sup> *Gross national product (GNP) is an estimate of the total value of all the final products and services turned out in a given period by the means of production owned by a country's residents. GNP is commonly calculated by taking the sum of personal consumption expenditures, private domestic investment, government expenditure, net exports, and any income earned by residents from overseas investments, then subtracting income earned by foreign residents. <https://www.investopedia.com/terms/g/gnp.asp>.*

conducted in 2015, which have demonstrated that almost half of the EU population, about the 44%, aged from 16 to 74 had insufficient digital skills to participate in society and economy. Moreover, In the active labour force<sup>19</sup> (employed and unemployed), this figure is more than a third and about the 37%.

Consequently, digital competences as vital for participation in today's society and economy.

The following graphic, done in 2015, shows the percentage of individuals with basic or above basic digital skills in different countries of the world. The highest percentage of people with digital competences were from Luxembourg, about the 87%, while the lowest was registered in Romania, where only the 28% of them have this knowledges.

Due to this critical evidence, the concept of digital literacy started to be considered as a dangerous social issue that needs to be tracked. Therefore, it was deeply analysed during the last decades with the aim of finding both causes and solutions. In the framework of studies conducted in this field, the gold medal goes to the European commission for two main reasons. Firstly, it released "A new skills agenda for Europe: Working together to strengthen human capital, employability and competitiveness" in 2015, to propose ways to address the skills challenges that Europe is currently facing. These competences include literacy, numeracy, science, and foreign languages, as well as more transversal skills such as digital competence, entrepreneurship competence, critical thinking, problem solving and learning to learn. Secondly, one of the most important studies conducted was done by the Joint Research Centre (JRC) of the European Commission, who developed the Dig Comp, which stands for The European Digital Competence Framework for Citizens, to spread a common framework about the meaning of being digitally savvy in an increasingly globalised and digital world.

The Digital Competence Framework for Citizens is structured in four dimensions:

- Dimension 1: refers to Areas identified to be part of the digital competence.
- Dimension 2: consists of the Competence descriptors and titles that are pertinent to each area.
- Dimension 3: comprehends proficiency levels to include 8 levels of learning outcomes.
- Dimension 4: gives examples of knowledge, skills, and attitudes.

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<sup>19</sup> *The labour force, or currently active population, comprises all persons who fulfil the requirements for inclusion among the employed (civilian employment plus the armed forces) or the unemployed. Employment - Labour force - OECD Data.*

Moreover, as the fast pace the digital transformation was running, the dig comp has been developed in 2013 and then updated in 2015, that is why it consists of two phases. Taking into consideration the first phase, the dig comp had the aim of creating a universal framework of the most important competences a person should develop during his life to be part of the society and create better conditions for him or herself in terms of quality of life, employment, career, social inclusion, and fully experience the benefits given by the newest innovations. These competences are: Information and data literacy, Communication and collaboration, Digital content creation, safety and problem solving. What is even more remarkable is that after these frameworks were released by the Dig comp, a huge number of different countries such as Italy, France, UK, Spain, Slovenia, Poland, referred or list this framework in their political documents developed to find solutions to bridge the lack of digital literacy in their own countries.

### *Digital literacy: implications on the work sector and social life.*

Apart from the Dig comp frameworks, it is now fundamental to understand the reasons why the whole world is moving at fast pace to bridge the lack of digital literacy. It is widely believed that people without the ability of enjoying the benefits of the technology are exposed to harmful consequences for their life under several perspectives. In fact, innovation, devices and digital information are currently changing every aspect of our life and overwhelming us in an escapable cage. In this digital jail, the people more likely to survive are the ones who can manage and control the technologies available in order to benefit their positive changing and not to be led and controlled by them. Therefore, lacking from digital skills often means not being able to choose, retrieve, select, and share the right information, but instead not having the awareness and the capacity to understand the real personal needs, being left behind this new form of society and incapable of leaving online. Moreover, the aftermaths of the lack of digital skills can also spread in several fields of life such as job career, society inclusion, financial aspects and health sector. Starting from the work sector, the lack of digital skill often obliged people to lower their expectations. Nowadays, in fact, the entire work sector requires, as a fundamental skill, to be digital literate. It is common, indeed, that the lack of digital skills could become an exclusive reason for not getting the job. This means that, people who live in both urban or rural areas, without any capacity in dealing with technologies for a wide range of reasons like educational or purchase power, for example, could be constricted to lower their job standards, and look for lower income jobs in which those skills are not relevant.

Another sector affected by this type of digital divide, is the social aspect. Social medias, for example, give people the powerful and majestic opportunity to build relations with others throughout a device, to share information, thoughts or articles and build a social position recognised in the real life too. Technological tools, instead, like mobile phones or television allow to be always updated about what is happening all over the world or online platforms give the opportunity to apply for a smart-working job, for example. It is clear to understand that, for the people who are out from this new way of living, the total number of this unique benefits will remain unknown for their entire life, because their digital ignorance prevents them from

entering in the on-life world. Additionally, since most of the real-life activities have been transformed into digital, such as financial activities, payments, bank accounts, not only the underdeveloped skills will deprive people of their primary necessity, but also, they would not be able to access newest ways of living the financial or even health sectors. For instance, during the last decades there have been developed app's able to take track of your banks accounts, payments and health conditions, and if a person who suffer from an illness contemporary lack from digital skills that could help to control their health status, this could be a danger exclusion since the person could not enjoying the greatness and positive benefits the technologies could give to him or her.

## Chapter 3

### *“How the Digital Divide exacerbates the existing inequalities”.*

#### 3. *The “Gaps” of our society.*

From the moment the events began to be sang by the sublime balladeers, to the moment that it started to be printed on papers, documents, tales, and millions of books told us that the human history has been affected by several injustices, wars, and exterminations. The reasons for these tragedies were always the same, and even if the periods of these were different, they could be linked to the economic power of some countries over others, to the belief of being the only race worth living and better than others, the privileged access to education which made some people stronger, more powerful and intelligent, or political, cultural, psychological attitudes, the family context and the social context. These repetitive reasons which affected our history are now known as the “gaps between people”. From the moment that the sentence “we have to learn from the history in order to avoid making the same mistakes” has never met the interest of nobody, this gaps still existing today and are causing several, harmful and severe issues in our society. Indeed, not only are they causing famine, wars, and racial disparities, but they are playing a crucial role in deeply exacerbate the phenomenon of the Digital divide. For that reason, a whole chapter will be dedicated to the existing gaps which are currently affecting our society, in order to deeply examine them and the way they cause the digital divide. Moreover, the term “gap” referred to the invisible barrier which separates some people from others for different reasons but, focusing on the digital divide, the most tangible aftermaths are being brought by the educational gap, the economic gap, the race gap, and the gender gap. For example, evidence found that Caucasians are much more likely than non-Caucasians to own a computer as well as have access to the Internet in their homes. Gender was previously thought to provide an explanation for the digital divide, many thinking ICT were male gendered, but controlled statistical analysis has shown that women with the same level of income, education, and employment embrace ICT more than men. The correlation between income and internet use suggests that the digital divide persists at least in part due to income disparities. Most commonly, a digital divide stems from poverty and the economic barriers that limit resources and prevent people from obtaining or otherwise using newer technologies. Taking all of this into consideration, is fundamental to give a closer look at the previous mentioned gaps, starting from the economic and educational one.

#### 3.1 *“The Economic gap”.*

During the last two decades, the digital divide has been studied extensively with the aim of examine the total range of possible variables able to cause, influence or exacerbate the existing inequalities caused by this phenomenon. Leaving apart the factors already examined such as digital literacy, location and infrastructure, the researchers did not stop at the most immediate and visible causes relatable to the digital divide but went deeper to have a complete framework of it. In doing this intensive assignment, a crucial role was played by Farooq Mubarak, Reima Suomi, Satu-Päivi Kantola, since they managed to confirm the

relation between the ICT and the socio-economic and educational variables. For reaching this conclusion, they had to follow different steps and took information from other studies conducted in this field.

Firstly, fundamental evidence came from the “Globalisation, ICTs, and the New Imperialism: Perspectives on Africa in the Global Electronic Village” written by Yunusa Zakari Ya'u and in “The impact of ICT development on the global digital divide”, by Doong, Shing-Hwang, and Shuchun Ho, in which they affirmed that the ICT landscape is highly uneven with varied resources distributed across the planet. As a result, the ICT divides the world population into two groups: the first one consists of developed countries which are continuously reaping the benefits of ICT, thanks to their high-income levels, while the second group consists of people from developing countries, which are characterized by low incomes that make them miss out on many benefits because of lack of access to digital technologies.

Starting from this assumption, the authors were capable of building two main hypothesis:

- the first hypothesis refers to the ICTs-income relation and stated that rise in income determines the rise in ICT adoption. This was also stated in “The evolution of large accidental wireless networks” by Beckham and in “Digital divide: determinants and policies with special reference to Asia”, written by Quibra.
- The second hypothesis refers to the digitalization-education relation and affirms that growth in education boosts ICT adoption. This Hypothesis was deeply agreed by Di Maggio, for instance, who reported this statement in his book “From the ‘digital divide’ to ‘digital inequality’s: Studying Internet use as penetration increases”.

Arrived at this point of the study, thanks to the multitude evidences inferred from different scholars, the authors build their final enlightening research paper, able to illustrate how the economic aspect of a person, such as spending power and incomes, or the GDP<sup>20</sup> per capita and the educational background, are two of the main factors that deeply influence the strength of the phenomenon, making it stronger and more powerful in causing general social disparities between people. What is even more remarkable is that for reaching this conclusion, they used a wide range of information from the world bank to conduct a multivariate regression analysis<sup>21</sup>. In this case, these statistics methods revealed the mathematical relation between an independent variable, ICT, and two dependent variables, which are the GDP per capita and the educational level of different countries. In particular, the result illustrated that the 70% of the time changes in income and education cause changes in ICT. Therefore, this revealed the strong relationships of income and education with ICT. Moreover, the magnitude of relationship between income and ICT is stronger than the education–ICT relationship, and as a result, income is now considered to be the leading cause of the digital divide across the world. After having clarified the relationship between digital divide and economic and educational variables, is necessary to examine the real situation the world is currently facing due to this

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<sup>20</sup> GDP: a measure of the value of the total production in a country, usually in a given year.

<sup>21</sup> The multivariate regression analysis is a precise statistics calculation which is particularly useful in studying the relationships among various factors with a great degree of accuracy since it examines the influence of several independent variables over a dependent variable.

huge social issue. Indeed, during the last decades, the aftermaths have been tracked by several researchers who focused on the whole planet.<sup>22</sup>

### *A closer look at specific countries.*

Starting from the United States, The U.S. Federal Communications Commission's 2019 Broadband Deployment Report<sup>23</sup> indicated that 21.3 million Americans do not have access to wired or wireless broadband internet. In 2020 it has been estimated that the actual number of United States Americans without high-speed internet is twice that amount. Even though in 2021 the percentage of people without internet connection decreased, according to PEW research centre's report, a significant gap still exists, and it was caused by the difference in incomes between people. Yearly salary around 100 thousand dollars or more enabled the US households to own multiple devices and have home internet service compared to those whose annual salary is 30 thousand dollars or more, and three times more likely as those earning less than 30 thousand dollars per year. Moreover, the percentage of highest income households who had no access to internet is around 1%, percentage that increased enormously for the lowest income households reaching the 13%. Consequently, Americans with larger income are more likely to buy a great variety of internet connected products, while, as the pew research centre survey reported, in 2021, the 24% of those with yearly average earnings under 30 thousand dollars do not own a smartphone and four out of ten low-income people do not even have access to internet in their houses. Moreover, the situation remains quite similar in other part of the world. For instance, in the United Kingdom one out of ten households do not have access to the internet. In Italy, instead, a recent survey has highlighted that the 19% of Italians have not ever used internet. Additionally, the consequences of the digital divide caused by the economic variables get even worse when talking about the least developed countries (LDC). The category of the LDCs was officially established by the United Nations in 1971<sup>24</sup>. The UN General Assembly mandated the Committee for Development Policy to review and monitor every three years the list of LDCs and make recommendations on the inclusion and graduation using three criteria which are based on income per capita, human assets and economic vulnerability. In this framework a crucial role was played by the international telecommunication union (ITU), who highlighted that in the LDC the average cost for mobile data per month is higher than in the developed countries. As a result, since half of their low monthly salary that should be used for coverage this cost, they are constricted to give up technologies due to their unaffordability. Additionally, according to ITU 720 million people still offline in LDCs represent 27 per cent of the global offline population.

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<sup>22</sup> Shing H. Doong, Shu-Chun Ho, *The impact of ICT development on the global digital divide*, *Electronic Commerce Research and Applications*, Volume 11, Issue 5, 2012, Pages 525-526.

<sup>23</sup> *Federal Communications Commission Washington, "Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion". FCC 19-44, D.C. 20554. May 29, 2019.*

<sup>24</sup> *Thematic report ITU Development LDCs and small island developing states ICTs, LDCs and the SDGs Achieving universal and affordable Internet in the least developed countries. [ICTs, LDCs and the SDGs \(itu.int\)](https://www.itu.int).*



### 3.2 "The Education Gap".

Leaving apart the economic sector, for what concern the educational gap it is clear to understand that as the digital divide enabled people to be integrated in the digital world, people cannot experience the currently society life. As I told before, the technology transformation, marked by the past third revolution and the ongoing fourth revolution, have reshaped every aspect of our daily life, and have brought everything into digital. Therefore, the educational system, which consists of schools, methods of learning, opportunities for young people to develop fundamental skills, or relationship between students and teachers, were overwhelmed by these transformations too. There are many factors to bear in mind while talking about education such as the changing of this essential system, the consequences of these transition from offline education to online education and, importantly also is to understand if technology is enhancing this sector and give benefits for a restricted range of privileged people, while leaving behind a great percentage of the population due to existing digital divide. Starting from the positive aftermaths, the fact that digital innovation has made the educational sectors more powerful is peaceful for several reasons. Firstly, the digitalization gives the possibility to have a majestic number of resources on the internet, which are always available, updated, and easy to be find. Secondly, the great amount of data and information help the people to examine every topic deeply because they have access to studies, research, or surveys from all over the world. Thirdly, since the learning processes have been shifted into digital, the methods of learning have changed irreversibly. Nowadays, infact, citizens can attend every university or do a job comfortably in their houses, without the need of moving from one place to another. Importantly also, is the relationship between teachers and students, since a great percentage of the lessons are not traditional anymore but held on an electronic device. Clear evidence of this were the Covid-19 pandemic years when teachers and students from every corner of the world first approached with these new methods of learning. Obviously, this required the development of different skills such as the teacher's capacity of explaining using technological devices, the improvement of their digital skills in general, the development of new methods to take track of their student's progresses. In the perspective of the students, instead, they had to grow their sense of responsibility, they had to get used to approaching with different resources instead of the traditional ones, "Students with "the click of a button" can explore information that once would have required extensive library research or may have been totally unavailable to them in their school or local library"<sup>25</sup>, stated Bulent Tarman in his research paper called "Digital divide in education". Nevertheless, behind every positive and innovative aspects listed, a contrary and negative correspondent issue is hidden. Infact, the real benefits of the digital transformation have only been grasped by a restricted and privileged category of people: the richest and developed country located ones. The other part of the world composed by poorer and developing or undeveloped country citizens were contemporary experiencing the highest degree of isolation and margination from the society. The covid-19, infact, highlighted the real meaning of being digitally excluded and the conditions of the 3.8 million people that are currently not using internet all over the world. In areas which are still not covered by broadband connections, poor students did not have

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<sup>25</sup> Tarman, B. (2003). *The Digital Divide in Education*, page 7.

the possibility to connect to the internet for three main reasons: difficult-to-reach areas, unaffordability of the devices, indifference from the government. The results of this unacceptable conditions, made the students incapable of following the lessons, delivering their assignment on time, and making them give up their school career. Taking into consideration the USA for example, the 11% of the population do not own a personal laptop, while the 20% had no broadband connection, therefore, in order to help and integrate the less lucky students, the traditional schools' buses were used for serving a roaming Wi-Fi hotspot. Nevertheless, there were other parts of the world who were suffering even more. For instance, India registered different tragedies related to the students lack technological devices and their unaffordability. The poorest families, indeed, did not have enough money to buy devices for their children, this means that they could only accept that their schooling had to stop. These tragic conditions were reported by an Indian student, called Sayada Rizvi, who explained that during the pandemic years, the only device which could be used as a medium to be connected for lessons and job, was her dad's mobile phone. This device had to be available for all the family's components, this means that the usage of such mean by one family member would have meant that the others had to sacrifice their needs. In this sense, Sayada told the interviewer that she was only able to follow one or two lessons per week and miss the others to give her sisters the possibility to catch up with her lessons or enabling his dad to work. Although this picture reported seems unbelievable, in some cases the consequences the covid-19 had on the mental health of the young were more severe. Indeed, a young girl was not able to accept this struggling condition, and the frustration and deep sense of marginalization from the society linked with the lack of a personal laptop made her kill herself. Taking all of this into consideration, is clear to understand that this deep social issue must be closed with urgency. To help bridge this educational technology gap, several projects have been done during the last two decades. In 1996, the Clinton administration made \$2 billion available for five-year grants from the Technology Literacy Challenge Fund<sup>26</sup>. Another was The Universal Service Fund, commonly known as E-Rate, whose objectives were to provide all public and private schools and libraries access to affordable telecommunications and advanced digital technologies, and to assist schools with limited budgets to acquire these services at reduced rates. Even though all the projects were useful and remarkable in theory, in the facts they did not change the situation significantly because the only means they considered important for bridging this gap was the money. As a consequence, even though providing economic resources to the poorest schools could be considered essential, poverty remains within the families who cannot afford the same devices the schools are equipped, and cannot afford devices to assist in research and other class assignments during non-classroom hours. Thus, like most social issues, the problem of integrating technology into school district classrooms is multi-faceted and will not be resolved by simply throwing dollars at the issue, but it will be necessary to deeply examine the issue and take it out from its inner roots.

### **3.3 "The Gender Gap".**

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<sup>26</sup> *The Technology Literacy Challenge Fund (archives.gov)*

The strong and unfair division between women and men has always been a constant presence of every stage of the human life. Since the earliest periods of history, the society was marked by the division between the two genders and the reasons behind this plague have always been the same across the different periods. The most shared belief was that the women were seen as the weakest gender which lacks from identity, capacities, intelligence, skills, and power. Indeed, no rights were recognised to them, but only duties and obligations. Born as a woman meant having only one scope to reach in their unpleasant life: give birth to children, preferably male ones, look after them and honour, respect and obey to their husband. Not only being a woman was seen as an unlucky design of destiny, but also if a woman gave birth to a daughter, this was a shame factor for her father.

Life of women has always been difficult, marked by a constellation of injustices, deprivations and rules to follow, their identity was not recognised, their future could not be created by them, their destiny was already designed firstly by their father and secondly by their combined grooms. Infact, even the freedom of feelings was deprived, women did not have the possibility to live their natural emotions, to decide who their true lovers were, to be satisfied or proud of their life. For what concern the social life, instead, girls were not supposed to receive any education except the lessons about how to become a perfect household, because they were completely banished from every form of carrier or jobs, this was, infact, reserved only for men. The deprivation of identity could also be seen in the politics life. From the moment women were seen only as mean to assure the proliferation of the human species, they did not have any other rights or capacity as people, infact they did not have the right to vote. We can clearly understand that the burden of being a woman spread amongst every aspect of the human life: social, economic, politics, educational and health. As a natural consequence of this, during history, especially in the early nineties, an enormous number of brave women started to create political movements against their struggling conditions.

Manifestations, parades, parties were secretly created to reverse these unjust inequalities to be recognised as worthy living humans and gained an equal social position as the male one. One of the most famous pioneers for the conquer of the women's rights was a British political activist named Emmeline Pankhurst, who organised the UK suffragette movement and helped women win the right to vote. The power of Emmeline helped the other women in finding the braveness to escape from their situations and marked the start of an unstoppable series of civil rights movements which allowed the women to gain a better position in the society. From that moment, women could receive education, build their career, be active in the political and social life and become the author of their own destiny. Although the division between genders decreased in the last decades, the perfect equality has not been reached yet, and the inequalities are tangible even in our current society. The reason behind this can be linked to the fact that it has passed a very little time since something began to be done to narrow the gender distance and delete the preconceptions about the women capacities, while the almost all of the history we have evidence about are marked by this strongly rooted problem. In other words, since the history began to be transmitted for further consumption, paper, documents, and books show that the 90% of the human stages were marked by gender inequalities and the 10% is characterised by movements which try to reverse this issue. As a natural consequence, nowadays the gender gap is still visible and not only it prevents women to enter in the

social, political, and economic life of the society, but also it enabled them to enter in the technology life and enjoy the benefits given by the digital transformation we are experiencing. In this sense, the gender gap became one of the factors that contribute in deeply exacerbate the Digital divide.

### ***Gender digital divide.***

In order to clear understand the phenomenon of the gender digital divide, it is fundamental to start from its definition. In doing such a complicated assignment, a crucial role was played by the Daka Advisory which defined the gender divide as follow:

*“The gender digital divide is the gap between men’s and women’s ability to access and use the Internet and digital technologies and contribute to and benefit from their development. Digital exclusion can prevent individual women and girls from realizing the benefits of digital technologies.”<sup>27</sup>*

Several evidence has shown that the participation rates of women in any of the related field of information technology register a troubling gender inequality. Although, both men and women are fascinated by the multitude applications of computer technology, other research suggests that women are not socialized to become involved in matters of technology. Indeed, in 1990, the percentage of women in computing jobs was 36%, while nowadays an average of 62% of men use the Internet compared with 57% of women globally. This enlighten statistics released by the ITU, help us understand that the one who are suffering the most from the gender divide are women and girls and the reasons behind these struggling issue are several and range from infrastructure, spending power, level of education and the gender equality within different countries that prevent them to access and use the internet as a mean for their personal, social and economic development. Another factor to take into consideration is the cultural preconceptions. A paper published by J. Cooper from Princeton University points out that learning technology is designed to be receptive to men instead of women and computers are a part of the male experience since computers have traditionally presented as a toy for boys when they are children. As a result, as children grow older, young girls are not encouraged to pursue degrees in IT and computer science. All these factors illustrate that women are less likely to know how to leverage devices and Internet access to their full potential, even when they do use digital technologies. In these sense, some important statistics were given by UNESCO for the EQUALS skills coalition in the publication named “I’d blush if I could: closing gender divide through education”, which demonstrated that today, women and girls are 25 per cent less likely than men to know how to leverage digital technology for basic purposes, 4 times less likely to know how to programme computers and 13 times less likely to file for a technology patent. In rural India, for example, a study found that the majority of women who owned mobile phones only knew how to answer calls. They could not dial numbers or read messages without assistance from their husbands, due to a lack of literacy and numeracy skills. What is even more remarkable is that not only do the gender divide affect least developed countries, but also in some parts of the world where the internet connection is near-universal, surveys demonstrated that only the 21% of women uses internet for searching for important information related to health, legacy,

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<sup>27</sup> *GDDI-Report-2022.pdf (gddindex.com)*

or politics. In conclusion we can clearly understand that this rooted problem must be solved with urgency because, as DAKA advisory stated:” Ensuring women’s equal access to and use of technology is a keystone to achieving women’s full inclusion in the digital economy and society”. That’s why they created the so called “Gender Digital Divide Index (GDDI)”, which is a benchmarking tool designed to measure progress in bridging the gender digital divide. It showed that the top five countries in the ranking were Sweden, the United States, Europe, Singapore, and Chile because they are high-income countries characterized by Internet coverage, affordability, and programs to support women’s education. While at the bottom of the ranking is possible to find the least developed countries which are difficult to reach in terms of internet connection and where the gender gap is still incredibly high. These countries are Uganda, Tajikistan, Ethiopia, Haiti, and the Democratic Republic of Congo.

## Chapter 4

### *“India study case”*

#### 4. *“Why is the digital divide strongly rooted in India?”.*

After having examined in depth the phenomenon of Digital Divide, it is pacific that the world is rapidly undergoing a digital transformation but the progress of digitalization, however, has been unequal and spread among the different countries of the planet differently. As we have already said, the phenomenon is able to both enhance or worse the conditions of the countries in which it takes its roots, for that reason it will enable people to be fully integrated in the digitalization and reap the several benefits given by technologies in the most developed countries, while in the least developed ones, it exacerbates the existing inequalities. A clear example of a country who is currently being negatively affected by the digital divide is India which, because of its demographic, geographic, socio-economic, and political conditions, it positioned on first place when talking about digital divide. Apart from its general consequences, the dramatic phenomenon does not allow both the citizens and the country in its entirety to take part of this new form of living life, which remains further behind and emarginated from the world. Several research have been done in this country for deeply analyse the reasons why it is heavily rooted more in this area of the planet than others. To have a complete view, is fundamental to examine the impact of the digital divide in the universal provisioning of education, health and financial inclusion and focus on why they create a fertile land that make the arisen of the digital divide possible.

In order to fully understand the reasons why the digital divide is rooted in India more than in other countries, is fundamental to understand that the citizens of this least developed country can be divided by different variables that highlight the existing inequalities between people. They can be listed as follow:

- Economical variable: which divided the population between rich and poor.
- Location: which distinguishes urban area and rural areas.
- Gender: which recognizes different rights and duties to men and women.
- Religion and castes which separates the Scheduled Castes from the Scheduled Tribes.

There is evidence of a palpable digital divide between the rich and the poor, the urban areas and rural areas, men, and women and among different castes<sup>28</sup> and religious groups. This divide mirrors the existing socioeconomic inequalities and for this reason the most marginalized groups have been the least digitalized whereas the privileged groups reap the benefits of digitalization. Moreover, these divisions amongst the citizens, not only prevent people from catching the pace of the digitalization, but also, they do not permit the country to fully improve and exploit its unique resources. Indeed, it is a common shared belief that India is at a high level in terms of human capital development and online services provision, but is held back by relatively lower levels of infrastructure development. Therefore, the government has been promoting its

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<sup>28</sup> *The caste system divides Hindus into four main categories - Brahmins, Kshatriyas, Vaishyas and the Shudras. Many believe that the groups originated from Brahma, the Hindu God of creation.*

flagship programme, Digital India<sup>29</sup>, with the purpose of transforming India into a digitally empowered society and knowledge economy. Unfortunately, what is real happening instead, is that the Digital India Project has benefited the privileged society more than the underprivileged. A clear example of its failure is the introduction of the biometric-authenticated PDS. This system includes fingerprint scanners which are used to verify thumb impressions of family cardholders to allow them to buy commodities at fair price shops. Because of the digital “illiteracy” of the Indian people, a report by Centre of Internet Security (CIS), stated that even when they themselves know clearly a person deserves the ration support, until the machine approves it, they could not help. Therefore, the direct impact of automating PDS increased the dramatic condition of the poor whereas the rich remained unaffected.

#### ***4.1 “Determines of the digital divide in India”.***

In order to examine the consequences of the digital divide in India, it is fundamental to answer a question: What factors contribute to the digital divide and inequalities arising from it? Answering this question is quite simple for us because we can recall the causes examined when talking about the digital divide in general. Firstly, it is possible to classify the digital divide into two groups: inequality among those who have access to technology or the first-order effects, and inequality in the ability to use the technology among those who have access or the second-order effects. Moreover, the first-order effects must be examined by taking into consideration specific variables by which it is deeply influenced such as castes, educational level, regions, incomes, and religions. For what concerns the second-order effects, the factors that lead to disparities in digitization were compiled by The Internet Society, a nonprofit specializing in the development of the internet as a global technical infrastructure, and they are Infrastructure, location, skills, and digital literacy. With the purpose of having a complete framework of the Indian current situation, we are going to first examine the issues related to the “Access” to technologies and its consequences and after we will go straight to the Second-order effects of the phenomena which includes the explanations and evidence for the infrastructure, locations, and digital literacy causes.

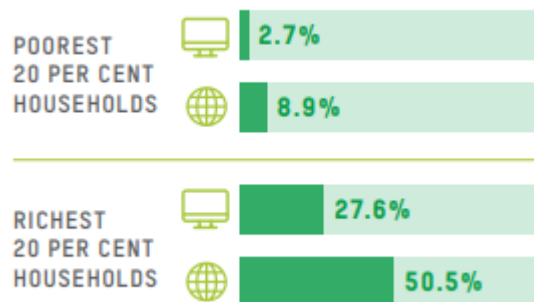
#### ***4.2 “Access Divide”: access to computers, mobile phones, and electricity.***

Starting from the first order effects, so in what is known as the “Access divide”, a common belief is that once everyone has access to technology and the internet, everyone has the same level of potential to use technology and draw benefits from it. However, this belief is overshadowed by the fact that in India the access to the internet and to different technological devices and resources such as mobile, computer and electricity is influenced and differs between castes, educational level, regions, incomes and religions. For that reason, we will examine in depth some surveys conducted on this field, especially the one released by the Oxfam India which is a movement of people working to end discrimination and create a free and just society, which analyze the issues related to mobile computer access and electricity. Indeed, they

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<sup>29</sup> Digital India is a campaign launched by the Government of India to ensure that the Government's services are made available to citizens electronically through improved online infrastructure and by increasing Internet connectivity or making the country digitally empowered in the field of technology.

demonstrated that, despite the fact that the number of internet subscribers is increasing from 2017, only one-fifth of the population can operate a computer or use the internet. Talking in numerical terms, the difference is palpable between the poorest and richest household, in fact among the poorest 20 per cent households, only 2.7 per cent have access to a computer and 8.9 per cent to internet facilities, this percentages rise incredibly among the top 20 per cent households, where there proportions are 27.6 per cent and 50.5 per cent, respectively.



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### ***Access to computer.***

During the last decades the entire world’s population is experiencing a powerful and fast digital revolution which is transforming every aspect of our life by shifting to digital mediums even the essential services of education, health and financial transactions. This unstoppable revolution was even more palpable during the pandemic years, which highlight the urge need of having devices for being connected to the online world, have skills to deal with them and stable connection to be able to continue the life without being emarginated from the society. We can clearly understand that in India both the digital revolution and the pandemic years strongly exacerbate the existing issues of the country. Different surveys conducted with the aim of investing the percentage of people with access to a common device such as the computer, showed that in the period between January 2018 and April 2018, the 93.5 per cent of the total percentage of respondents did not own a computer. This percentage rose during the covid-19 years and reached the 96.6 per cent by the end of 2021. From the moment that these numbers are contemporary alarming and unbelievable, is fundamental to examine how the access to computers changes due to the different conditions and how it is influenced by the most significant variables that are:

-Castes: the access to computer differs between the OBC (other backwards classes), the ST (scheduled tribes) and the SC (scheduled castes). Indeed, the OXFAM surveys demonstrated that the likelihood of access to a computer is higher for the general and OBC groups than for the SC and ST populations. Moreover, while the percentage of SC and ST without computers has mostly not changed during years but remained high, for what concern the category of OBC, it has registered a slightly increase during the pandemic.

<sup>30</sup> Source: *Inequality Report 2022: Digital Divide*. Page 15.



-Education: this variable deeply influences the chances of having a computer, infact estimates suggest that the likelihood is more when people have completed at least secondary education or above. For instance, a person with a post graduate degree is 40 per cent more likely to have a computer than a person with no education.

-Region: India has always believed to have invisible barriers which split the country into the urban area and the rural area. Indeed, the urban population located in easier-to reach areas is 8 per cent more likely to have a computer than the rural population were the broadbands connection still struggle to assure a stable connection. Further evidence of this were registered during the post-pandemic years when the 99 per cent of the rural population did not own a computer.

-Income: obviously the access to computer is also determined by the people's spending power and depends on their monthly salaries. Studies suggest that there is strongly dependency between the level of incomes and the likelihood of owning a computer. Therefore, people with less paid job and with lower levels of monthly income are less likely to have a computer. The difference between the percentage of permanent salaried and daily wage workers having a computer was still 15 per cent by the end of 2021.

-Religion: the determines of the access divide can also be found in the different religions spread amongst the society. This variable influences the possibility of having a computer because the different faiths can prohibit the use of some devices. Indeed, the likelihood of having a computer is highest for Sikhs and Christians, followed by Hindus and Muslims, respectively.

### ***Access to mobile phones.***

The mobile has become an extension of ourselves, something that live with us and impossible to get rid of. In Europe or occidental areas of the world, almost everyone owns a smartphone as a sign of connection to our current and increasingly technological society. Therefore, a person without a mobile is someone cut out from the real time world. Nevertheless, in India this normal and rooted concept is upside down and yet the probability to find people without a mobile is higher than in other areas of the world. Infact, India registers 1.2 billion mobile subscribers in 2021, of which about 750 million were smartphone users. This means that almost the 40 per cent of mobile subscribers in India still lack a smartphone. Another factor to consider is also the monthly expenditure incurred on mobile charges. The expenditure can be divided into spending less than INR<sup>31</sup> 100, between INR 100 and 400 and more than INR 400. In order to understand the weight of the expenditure balanced on the people's wage, the cheapest monthly prepaid plan for Airtel<sup>32</sup> and VI is of INR 149 each, BSNL<sup>33</sup> is INR 187, and Reliance Jio<sup>34</sup> is INR 199. This means that to have monthly unlimited calls and some amount of data per month, a user must pay a minimum of INR 149. Going forward with the

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<sup>31</sup> *The Indian rupee (INR) is the official currency in the Republic of India.*

<sup>32</sup> *Airtel is a multinational telecommunication company which provides online services from Asia to Africa. Is the second largest telecommunication company of India.*

<sup>33</sup> *BSNL is a telecommunication company of the Government of India.*

<sup>34</sup> *Reliance Jio is an Indian telecommunication company.*

same procedure of the computer access, we can now focus on the different variables that play a crucial role in make this phenomenon took roots.

- Caste: Regarding monthly expenditure on cell phones, general and Other Backward Classes are more likely than Scheduled Castes and Scheduled Tribes to spend more than INR 400 on cell phone charges. The general category is, on average, 10 per cent more likely to spend over INR 400 than SC and ST.
- Education: as well as the computer, the percentage of respondents having a phone increase as the level of education rises. A person with a higher level of education is 60 per cent more likely to have a phone as compared to someone with no education. As for mobile charges, spending more than INR 400 is more likely for those with higher levels of education since they may have better job opportunity and higher salaries.
- Region: is easy to understand that the percentage of urban population having a phone and spend more than on mobile charges is more than the rural population, the difference is about 12-14 per cent.
- Income: it is understandable that the increase of people's income and monthly salaries determine an increase in the percentage of respondents with a phone. Consequentially, those with higher incomes are also more likely to spend more than INR 400 on phone charges than those with lower income.
- Religion: studies conducted in the middle years between 2018 and 2021 have shown that the Sikhs have greater access to mobile phones, while Muslims have half of theirs.

### ***Electricity.***

Another shocking factor to consider to deeply understand why the digital divide is such a bleeding plague for this country is the access and availability of electricity amongst the different areas. It is clearly understandable that access to electricity is crucial for digital access, and it allows people to charge devices and access the internet. Although the electrification of country must be considered as the basis for our daily life, in some difficult-to-reach areas in India, people still struggle with this and yet they do not get enough electricity from the government. Several surveys demonstrated that in 2017 only the 16 per cent of the India's households received between one to eight hours of electricity daily, compared to the 47 per cent of the richest household which received more than 12 hours of electricity per day. Luckily, the Centre for Monitoring Indian Economy (CMIE) affirmed that in 2021, households with less than 8 hours of power in a day has dropped to almost zero.

### ***4.3 "Use Divide": location and digital literacy.***

As we have already stated before, not only does the digital divide refer to who has access to technology and who has not, but it is also a matter of how people use technology if they are able to reap the benefits of these innovations and what are the inequality in the usage of ICTs. Therefore, the second level of digital

divide consider the access to technology as an independent building block which demands a more profound understanding to investigate the real reasons of this phenomena which aggravate the already existing complex social divisions. Indeed, the factors that need a more intensive examinations are Location, education, digital literacy. Moreover, the determines of the second level digital divide can be also linked to the existing Gender division which still afflicts the Indian country.

### *Location.*

The first main factor to consider while focusing on the second level of the digital divide is the “location” and the differences between the rural and urban areas of the country. Firstly, is fundamental to affirm that the discriminations and forms of exclusions which afflict the country have a double layer. The first layer consists in issues, discriminations and inequalities which affects the country in its entirety preventing it to be fully integrated with the rest of the world. The second layer, instead, is composed of the enormous number of inequalities, and differences which separates some category of people from others and afflicts the country from the inside. Focusing on of the factors that exacerbate the existing inequalities which characterized the country itself, the location must be the first one to analyse. The fact that India is divided into the rural areas and the urban areas, means that the people who live far from the city centre, in least developed areas and difficult to reach in terms of connectivity and broadband connection, are the one who are suffering the most for the digital divide. Indeed, several studies conducted on this field, showed that only the 31 per cent of the rural population uses the internet compared to the 67 per cent of India’s urban population. Another evidence was given by the Indian Telecom Services Performance, which revealed that the total number of internet subscribers per 100 people in India stands at 57.29, and this number being around 3 times higher for urban India compared to rural areas. The reason hidden behind such this huge problem can be addressed to the fact tath that some states with better institutional, infrastructural, and human capital, like Maharashtra, could take the lead in developing robust and competitive IT industry through appropriate environment and incentives. However, even in high penetration states, the spread of the IT sector was led by few but more powerful states which decide whether spread the IT and limited its usage to specific districts or geographical areas, causing the exclusion of the poorest and least developed areas from the society. Moreover, another variable to take into consideration while talking about “location”, is the people’s economic condition. It is a common and shared belief that the terms “rural areas” are often synonyms of “poorest people”. indeed, people who live far from the urban part of the country, most of the time have also low education level, lower monthly-salaries, worse incomes and could not afford the numerous technological devices.

As time passing by, internet rooted in our daily life and is necessary for different activities such as attend online classes, use social networking, or avail opportunities. However, Affordable connectivity is essential to derive the benefits of digital technology, but since is not affordable for everyone, a great percentage of the people in India remain cut out from this fundamental activities and the inherent internet’s cost enabled them to catch up with the pace of our society is changing its nature from real to digital society. A common belief is that population with better incomes has better chances of adopting ICT. An economist who did

several studies on this topic was Asrani, who found that population with better incomes has better chances of adopting ICT. Her calculations show that at lower income levels, the gap between rural and urban sector home ICT adoption is about 10 per cent and at highest level of income, rural-urban household ICT adoption gap increases to about 50 per cent.

### ***Digital literacy.***

Digital literacy is one of the factors that determines the level of usage when one has access to ICT and even this concept is linked to the different areas of India where people are located. Infact, focusing on urban areas, several studies have demonstrated that digital literacy is relatively higher, and it is about the 61 per cent, percentage that strongly decreased when taking into consideration the rural areas where is 25.5 per cent. Different research conducted on this field, focused on other shadows of the digital literacy concept, and examined it in terms of what pushes the people in using the internet for what purpose, why they use the technology and what are the most recursive actions made by them. These studies concluded that, in India, only the 38 per cent of households are digitally literate and between these percentage the people who lives in socio-economically disadvantaged conditions and has low education levels use ICT more for entertainment purposes than utilitarian purposes. For instance, even though women in their community were using phones for personal use, they were unable to make financial transactions online, and did not use phones for their businesses.

### ***4.4 Gender Gap: women's role in India's society.***

In Indian society, the gender inequalities are a major and palpable problem and the ones who suffers the most for this kind of discrimination are the women. Although the several projects made in order to bridge the divide between women and men and the current economic growth of the country, women still have to fight against strong barriers which prevent their entrance in the society and also their recognition as human with the same capacities, possibilities and rights of men. As a result, women are deprived from their identity, freedom and dignity, their voice is not worthy to be heard and their marginalization is currently the highest which has ever been registered. Focusing on the reasons behind this unpleasant and harmful plague, save the children association listed a series of causes such as:

- Illiteracy: many surveys demonstrated that despite nation's education reform, women and girls are still denied the possibility to learn, attend university and apply for jobs which are only for men.
- Patriarchal setup: the predomination and power of men towards woman is still rooted in both the society and family life. This system is based on the value of obedience and respect of women for their fathers and grooms.
- Poverty: although India is rapidly registering progresses in both the economic and social sectors , it is still a developing country where many people live under the poverty line. This condition deeply exacerbates the gender gap as family prefer to send their sons for education rather than sending their daughters.

- Social beliefs and customs: in rural communities and business societies, in terms of economic, religious and political considerations men are valued and considered more than women. For that reason, many households still prefer having a son rather than a daughter.
- Women's lack of awareness: what is even more surprising is that most of the time the division between genders can be caused by the women themselves. Prevalent culture and social conventions have brainwashed women who are currently lacking for the awareness of their struggling conditions and see the value of "obedience" to their men as a natural rule to obey. For that reason, it is critical to remove these obstacles and making women more confident in demanding for equality.
- Child marriage: a rooted India's practice consists of coercing girl under the age of eighteen years old to get married and have children. We can clearly understand that young girls which must obey to their grooms, look after the family and give birth to children are unable to finish their study courses, apply for a job or dedicate to their careers.

#### ***4.5 Gender digital divide: Men's rules for women's access to internet.***

Taking all of this causes into consideration, we can clearly understand that this rooted and severe gender divide was also exacerbated by the digital divide. The phenomena, indeed, made the exclusion of women from the society even more serious since not only does the gender divide prevent them to be fully integrated in the society, but also the patriarchal setup, beliefs and different religions dictated rules about "how" and even "when" women could use and access the internet. Indeed, it is often perceived as a risk to the traditional social order, unsafe for women and girls and, Chowdhury and Binder, stated that, in some rural areas, is considered immoral and men banned their usage. As a natural consequence, this has resulted in lesser levels of assimilation of women in digital transformation than men and even when women receive the permission of having digital devices or access the internet, the causes listed before such as lack of literacy, low levels of education or poverty, make them unable to reap the benefits of the technologies anyways. In other words, the causes that lead to a deep gender divide are the same that cause the digital divide. Therefore, many surveys were conducted to find relation between the two phenomena and find solutions to bridge them. Importantly was the evidence given by the Global Gender Gap Report of 2021 which demonstrated that India ranked 140th out of 156 countries in terms of gender parity. Another important survey released by the "Inequality report 2022: digital divide", affirmed that women, because do only own less sophisticated handsets, use devices for less intensive sessions and for a smaller range of digital services, primarily calls and SMS.

#### **4.6 Gender Digital Divide in Education.**

The effects of the Digital Gender Divide of India can be also seen in the educational system of the country. Since there has been a revolutionary shift in the nature of education through adopting technology based online distance learning, in the India context, it turns as another situation which further exacerbate the existing inequalities between people because the women's exclusion or prohibition in using technologies making them unable to catch the pace of this transformation, leaving them further behind.

Focusing on the phenomenon of women's exclusion to digital education, several studies have been conducted of this field with the purpose of finding possible reasons which cause such a deep discrimination. The most enlightening evidence has been found by the studies which has focused on the women's participation in the disciplines of science, technology, engineering, and mathematics, also known as "STEM". Even though the most significant discoveries were done by women such as K Sumathy<sup>35</sup>, Tessy Thomas<sup>36</sup>, and Ritu Karidhal<sup>37</sup>, the women's role in this fields is still underrated. For this reason, the British council released the article "STEMing digital divide in India", written by Deepika Baruah, who wanted to highlight evidence hidden behind these injustices. According to a 2020 United nations Report, although India has the highest proportion of women graduates in Stem, about the 43%, Indian women scientists are only 14% of the total. Moreover, according to a 2017 report by the Indian policy think-tank NITI Aayog, many qualified women scientists opt for undergraduate or school level teaching assignments and only 15-20% join tenured faculty positions because, as Deepika Baruah<sup>38</sup> stated: "women struggle in getting academic merits since personal interactions with male colleagues are deeply constrained by the patriarchal cultural barriers of so-called morality". Importantly also was the UNESCO 2019 report called "women in science", which affirmed that women are less paid for their research.

Moreover, not only the digital gender divide hit the Stem sectors, but its consequences can be seen also in daily life of women. In this sense, in 2023 Manya Rathore published an article about the percentage of female and male with at least 10 years of schooling both in the rural and urban areas of India, and said:

*" Around half of the male population, living in the urban areas, stayed in school for at least 10 years, compared to only 41 percent of their female counterparts. The gender education gap become even worse in the rural parts of the country, where only one out of three women in this region receiving at least 10 years of schooling".*

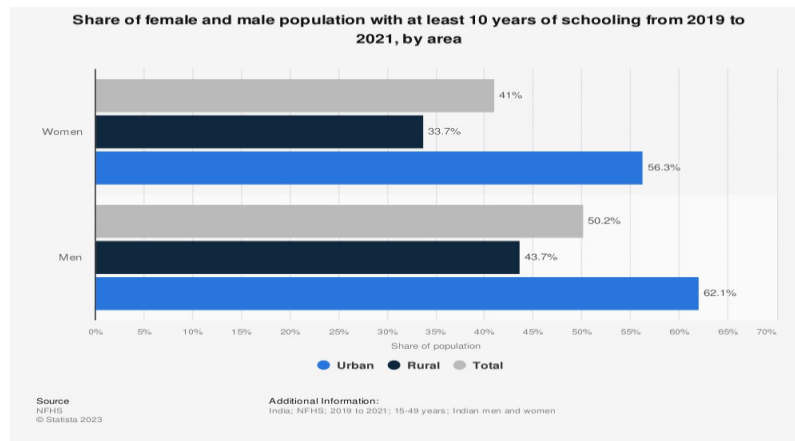
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<sup>35</sup> K Sumathy who was instrumental in development of Covaxin, India's first indigenous Covid vaccine.

<sup>36</sup> Tessy Thomas, called the 'missile woman of India' leading development missiles.

<sup>37</sup> Ritu Karidhal, the "Rocket Woman of India", Deputy Operations Director for India's Mars Orbiter Mission.

<sup>38</sup> Deepika Baruah is a Project Manager at British Council.



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#### 4.7 Solutions for bridging the India's Digital Divide.

The urgency of bridging the digital divide is being the focus of the government and of several world's major foundations lately. Firstly, seeing the importance of digital literacy, the Supreme Court of India has declared the right to access the Internet as a fundamental right, making it a part of the right to privacy and the right to an education that comes under Article 21 of the Constitution. A crucial role is being played by the Indian's government too, which released several projects to solve the consequences brought by this issue on the social, economic, educational, and financial sectors. Starting from the educational sector, the government launched the Bharanet Project. The Bharanet is the National Optical Fibre Network, and the project has the aim of providing a highly scalable network infrastructure accessible on a non-discriminatory basis, which will allow the people who lives in the rural areas of the country to have more efficient and affordable connection for improving the e-education. Like the Bharanet, is the Gyandoot Project and the National digital literacy Mission; Gyandoot which means 'purveyor of knowledge' in Hindi, is a government-to-citizen, intranet-based service portal, designed to extend the benefits of information technology to people in rural areas by directly linking the government and villagers through information centres. For what concern the National Digital Literacy Mission, instead, it has been formulated to make people acquire the digital skills to enable them to actively participate in the democratic and developmental society. Importantly also, is the Jio Bharat "feature phone", which is the cheapest and easiest smartphone available on the market<sup>40</sup>. Apart from the government's efforts in the educational sector, it also concerned about the financial inclusion of the people. For that reasons it was the pilot scheme of the "E-rupee", which is a digital rupee whose pilot scheme was rolled out by the India's Central Bank, which will have the same value and legitimacy as a banknote or coin, with the purpose of making the inter-bank market more efficient and allow poor people to enter in the digital financial world and not be excluded anymore.

<sup>39</sup> Source: Fact Sheet No. 55 June 2019 UNESCO women in science Quartz. "Share of Female and Male Population with at Least 10 Years of Schooling from 2019 to 2021, by Area." Statista, Statista Inc., 26 November 2021.

<sup>40</sup> The "feature Phone" is only 299 rupees (about 14 euro) and offers basic functions without the complexity and cost of a smartphone invented to bridge the digital divide between rural and urban areas.

Taking all of this into consideration, we can clearly understand that the Digital Divide is being considered more and more seriously and seen as a plague that must be immediately solved. Even though the number of active internet users in India is expected to register a significant growth of 13 per cent in a year's time and touch 900 million by 2025, another more majestic goal has been proposed by the Deloitte Report of 2015, named "Navigating the New Digital Divide: Key Imperatives for Indian Retailers". The goal is reaching 1 million users by the end of 2026, thanks to the useful initiatives that will narrow the distances between different area of the country, solve the inequalities and help people to acquire the sufficient digital skills to reap the real benefit of the society's digital transformation and successfully enhance the quality of their life.



## *Conclusion.*

Arrived at this point of the thesis, we can confidently affirm that the phenomenon of digital divide is rapidly taking its roots in the world and is causing several victims. In such a developing society where technology is becoming essential for everyone's life, the fact that half of the world's population have no way to get online is unbelievable.

The analysis of the digital divide has showed that, even though people fight against discriminations every day, the world is still split into two halves: the rural and poorest people and the urban and richest ones. This division causes two main consequences: on one hand, the greatest majority of innovations born in the most developed countries where people, thanks to their economic conditions, highest levels of education and more sophisticated infrastructure, have the possibility to create a fertile land where technologies can grow. While the rural areas, because of their unpleasant conditions of living, are characterized by people who cannot enjoy the benefits of the digital transformation, since they do not have the chances to gain high levels of education and, as a consequence, digital skills. In addition, in some extreme cases, like the Indian one, the citizens are not even reached by any electricity or connection and, as a result, they are not even aware of the existence of the current existing technologies. On the other hand, starting from the assumption that in the most developed countries people are experiencing the latest forms of innovations such as Blockchain, Artificial Intelligence, Robots and the embryonal phases of the "Metaverse", while an impressive percentage of people do not even own a smartphone, makes palpable and visible that these two separate sections in which the planet is split into, not only are they running at different paces, but they are clearly living in different stages of the human life too. with reference to the first chapter, and as Floridi stated, apart from the G7 countries who are currently experiencing the Hyper history Era, the rest of the world is living in the Historical one, or worse, in the Prehistorical.

As the time passing by, the phenomenon of digital divide has been taking more and more seriously because the distance between people is getting increasingly wider. The more the technology grows, more difficult the problem become to be bridged. Infact, one thing is providing people a stable connection in their houses, another thing is explaining to illiterates which are the advantages of the Metaverse. This example makes it clear to understand that the distance is already enormous.

Naturally, people tend to blame this phenomenon to the G7 countries, because their rapid and unstoppable growth has an intrinsic element of selfishness; they invest in the newest technologies without taking into consideration the struggling conditions of the least developed countries. This can be in part true, but it must be considered that technologies are now overtaking humans too, and it is becoming difficult to catch up with them even for people who lives Hyper historically. As mentioned, while examining the third order technology, the chain Technology- Technology- Technology pushes people to reflect about the fact that innovations are independent entities that do not require the participation of humans for their development. For this reason, is not a matter of finding who has to be

blamed, but who or what has the power to find efficient solutions that are able to reverse this one-way revolution. Moreover, even if the most developed countries are reaping the benefits of the digital transformation, the negative aftermaths of the digital divide are affecting them too. The fact that half of the population do not have the possibility to reach high levels of education, means that they will not be aware of their capacities, their talents and make their knowledge and abilities available for the development of the world. Millions of people with relevant skills are currently suffering from this phenomenon because they have to grow accepting the truth that they will not have the chance to improve their quality of their life since they are emarginated from both the off line society and the on-line one.

We can confidently affirm that the world, even though an enormous number of people are part of this digitalized society or working in order to develop new technologies, the world in its entirety is using half of its potential. Therefore, several projects are being put in place for three main reasons:

- Firstly, it is unacceptable that in 2023 still exist discriminations which prevent the people's entrance in the society preventing them to be fully satisfied with their life.
- Secondly, allowing people to be digital literate could lead to significant economic growth since, if more human capital is available and more brains work together, the innovations could be developed rapidly.
- Thirdly, bridging the digital divide could be essential for bridging numerous existing inequalities caused by it.

The heart of this thesis has been, indeed, analyse the different social, economic and gender gaps that exacerbate or are exacerbated by the phenomenon. For this reason, if concrete projects will successfully help discriminated people to be an integral part of the society, the other inequalities will automatically disappear.

In conclusion, the fact that too many people remained emarginated for their entire life, is becoming a too high price to pay for the world itself. It is not a matter of "Brain Drain", but a "Brain's Extermination". The latest plague that has spread amongst our society, such as the COVID-19, has highlight how can be fundamental the participation of an enormous number of people who work together in order to find solutions rapidly which can benefit the whole world. therefore, for making a change, people have to join their forces and, from the moment the world is currently demanding a urge change, with the participation of everyone and the elimination of every form of trivial discrimination, this one way revolution can be shifted from a digital which "divide" to a digital which "unites" the two sections of the world and make them finally run in the same direction, at the same speed, on the same path, working together in order to reach the same objectives.

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## Ringraziamenti.

*Vorrei ringraziare il mio relatore, il professore Maffettone Sebastiano. Mi ha guidato ed aiutato a coronare la mia carriera triennale grazie al suo assiduo supporto. Il suo corso è stato per me illuminante, mi ha insegnato a guardare la realtà che ci circonda sotto diversi punti di vista, ed è per la profondità degli argomenti trattati durante il suo corso che ho deciso di trattare tale argomento nell'elaborato finale. Senza i suoi insegnamenti nulla sarebbe stato possibile, le sono immensamente grata per la fiducia che ha riposto in me, per la sua umanità e per il suo supporto costante.*

*Vorrei dedicare questo traguardo alla mia famiglia: Mamma, Papà, Diletta e Camilla. senza di voi, senza la vostra presenza, il vostro supporto ed il vostro amore nulla sarebbe stato possibile. Siete l'essenza della mia vita, le radici che mi hanno permesso di crescere, l'acqua che mi ha permesso di sbocciare. Ognuno di voi mi ha trasmesso valori, virtù, emozioni ed insegnamenti che mi permettono ogni giorno di affrontare la vita a testa alta, per questo vi sarò eternamente grata. Spero di avervi reso fieri di me, vivo per rendervi felici.*

*Mamma, tu mi hai insegnato i valori della gentilezza, dell'amore disinteressato, dell'altruismo, dell'ascolto e della profondità d'animo. Tu doni ed ami senza pretendere nulla in cambio, ti sacrifichi senza chiedere che questo ti venga riconosciuto, sei pronta a tendere la tua mano verso chiunque ne abbia bisogno. Vorrei ringraziarti per essermi stata accanto, soprattutto in questi anni più intensi, per avermi accolto tra le tue braccia, per avermi ascoltato ogni volta che ne avevo bisogno, ma soprattutto, ti ringrazio per aver saputo cogliere tutti i miei silenzi, in quei giorni in cui mi riusciva difficile aprirmi, ma tu sapevi capirmi senza la necessità di parlare. Nelle tue parole, nei tuoi gesti e semplicemente con la tua presenza sei in grado di farmi sentire protetta, al sicuro da ogni cosa che possa ferirmi o turbarmi, quando ti sono accanto è tutto sereno, colorato, pieno di speranza, regna la pace fuori e dentro di me. Non c'è cosa che mi rende più gioiosa di vederti felice, il tuo sorriso mi dà la forza per fare qualsiasi cosa. Porti la luce e l'armonia dentro la casa, sei il sole della mia esistenza, senza di te la mia vita non esisterebbe. Per questo, per il legame che ci unisce, per la visceralità del nostro rapporto, ogni giorno della mia vita cercherò di renderti felice e fiera di me, perché io sto bene solo se so che tornando a casa ci sei tu ad aspettarmi.*

*Papà, tu mi hai insegnato i valori della tenacia, della determinazione, del sacrificio, della dignità. Nonostante i tanti anni che siamo stati distanti, se ad oggi ho raggiunto questo traguardo tanto importante è soprattutto grazie alla fiducia che tu hai sempre riposto in me. Hai sempre creduto nelle mie capacità, e quando le situazioni mi portavano a credere che non ce l'avrei fatta, le tue parole, la tua vicinanza e il tuo modo di affrontare*

*la vita, mi facevano ritrovare la forza di affrontare tutto a testa alta. Molte volte ci sentiamo dire che abbiamo lo stesso carattere, e se questo significa essere una persona determinata, forte, dal grande cuore e contraddistinta da immensa forza di volontà, allora io ne vado fiera e aspiro ad essere come te. Mi hai insegnato il valore della curiosità, della ricerca, dell'amore per il sapere, dell'importanza di informarsi su qualsiasi cosa, per costruire la mia cultura, per diventare una persona completa. Tutti i miei obiettivi, con te a fianco, sono più leggeri e raggiungibili. Non mi hai lasciato sola, ogni difficoltà, ogni ostacolo, l'abbiamo diviso e affrontato insieme. Sapere di avere un padre forte come te, con delle spalle grandi da poter sorreggere il mondo intero senza sentirne il peso, mi fa sentire al sicuro, protetta e più forte. Ti prometto di impegnarmi con tutte le mie forze per raggiungere tutti i nostri obiettivi, perché voglio che la luce dell'orgoglio che splende nei tuoi occhi quando mi guardi possa brillare per sempre.*

*Diletta, tu mi hai insegnato l'arte di essere me stessa, di vedere sempre il lato positivo, di essere fiduciosa sul futuro, di non spaventarmi davanti gli ostacoli, perché tutto può essere risolto con le persone giuste e con la forza di volontà. In molti momenti, quando tutto sembrava più buio, quando ero disorientata e spaventata, tu, con la tua dolcezza e comprensione, eri la mia stella polare, capace di rassicurarmi, di farmi capire che tutto attorno a me era sereno e che, insieme, avremmo superato ogni difficoltà. Porto con me molto del tuo carattere, partendo dalle canzoni che sin da piccola mi facevi ascoltare e che oggi sono le mie preferite, la tua sensibilità, il tuo altruismo, l'amore per i cartoni della Disney. Non smetterò mai di ringraziarti per quello che fai per me, per avermi coccolato, cresciuto, protetto, insegnato che bisogna sempre andare avanti, per avermi ricordato sempre quanto valgo. Non scorderò mai le innumerevoli volte che mi ha difeso, con il tuo istinto materno che adesso ti fa essere la meravigliosa mamma del nostro Tancredi. Posso affermare che non poteva desiderare mamma migliore di quella che gli è stata donata, ma dovrà accettare che questa bella mamma dovrà dividerla con me, perché non potrei mai fare a meno di te, ti voglio bene.*

*Camilla, tu mi hai insegnato a sognare, ad amare incondizionatamente, a vedere la magia in ogni cosa che mi circonda. Ti contraddistingue il tuo amore viscerale per la famiglia, la magnanimità d'animo, il senso di protezione che hai nei confronti delle persone che ami. Le tue dimostrazioni di affetto non hanno rivali, le sorprese che organizzi, le tue creazioni che prepari per gli altri, il tuo senso di onorare e far sentire importanti gli altri. Devo ringraziare molto anche te, per essermi stata vicino anche quando ci separava un'enorme distanza, ma le tue parole sono state capaci di farmi sentire più serena. Mi fai sentire capita ed apprezzata, con te non servono molte parole, basta uno sguardo per capirsi. Mi hai insegnato, che nella vita non bisogna avere fretta, perché tutto arriva nel momento giusto, questo mi ha aiutato nel non affaticarmi affinché tutto fosse perfetto, ma a godermi ed essere grata del presente. Ci accomuna di certo il romanticismo, questo nostro voler costruire una vita simile alle favole che mi raccontavi*



*per farmi addormentare. Questa magia, che mi fai vedere ovunque, rende la mia vita più poetica e piena di amore, per questo non potrei fare mai a meno di te. Ti voglio bene.*

*Beatrice, la mia compagna di vita, la terza sorella che la vita ha voluto regalarmi, l'estensione di me stessa, la voce della mia coscienza, la casa in cui mi sento accolta, protetta, capita, apprezzata, compresa e amata. Non esistono parole tanto grandi in grado di esprimere la mia gratitudine nei tuoi confronti, vorrei inventare termini nuovi, nostri, che potessero, anche solo in parte, farti capire quanto tu sia parte fondamentale della mia vita. Grazie per essermi stata accanto ogni singolo giorno della mia vita, per aver condiviso con me i momenti più felici e spensierati e quelli più bui e difficili. Grazie per avermi teso la mano ogni volta che ne ho avuto bisogno, per essere in grado di leggermi dentro, per aver capito i miei silenzi quando le parole erano troppo difficili da pronunciare. Grazie per donarmi ogni giorno la tua presenza, così pura e preziosa. Per la fiducia che riponi nei miei confronti, per aver scelto di starmi a fianco e di regalarmi le tue parole così piene di amore, le tue risate così sincere ed il tuo amore incondizionato. Nei momenti più difficili, tu, con la tua pazienza infinita, mi sei stata accanto, stringendomi forte a te e ricordandomi quanto fossi forte e capace di superare qualsiasi difficoltà e raggiungere tutti i miei obiettivi. Con te non esistono maschere, siamo un'unica persona, legate da un sentimento indissolubile ed eterno. Tra noi è un dare e ricevere, amare ed essere amati, lo abbiamo tatuato sulla nostra pelle perché è l'essenza del nostro rapporto. Prometto di starti sempre a fianco e di essere per te quello che tu rappresenti per me: la vita. Grazie per esserci in questo giorno tanto importante, se ho raggiunto questo traguardo lo devo anche a te. Ti voglio bene.*

*Nonna Anna, ti sento vicina ogni giorno della mia vita, riesco ancora a sentire la tua risata, a vedere limpidamente i tuoi occhi e a sentire il calore delle tue mani che si intrecciano alle mie. Tante volte mi sei venuta in sogno, per rasserenarmi e farmi capire che tu, anche se distante, eri lì pronta a sollevarmi da tutte le mie paure. Ti ringrazio per tutto quello che mi hai insegnato, per le merende che mi preparavi, per le favole che mi raccontavi. Ti terrò sempre nel mio cuore, so che ogni volta che vedrò un cuore sul mio cammino sei tu che mi sorridi da lassù.*

*Stella, questo traguardo lo dedico a te. A te, amica mia, che mi proteggi e mi fai avvertire la tua presenza ogni giorno. Ti mostri a me in tante forme, nelle farfalle, nei tramonti, nelle stelle. Ti avevo promesso che avrei raggiunto tutti gli obiettivi anche per te, questo traguardo è nostro! Ti voglio bene.*

*A Nonna Lucia, a Nonno Ciccio ed a Zio Luigi, festeggiate da lassù con tutti noi. Spero di avervi reso fieri di me, Vi voglio bene.*

*Un ringraziamento lo rivolgo anche a me, auguro a me stessa che la fiamma della determinazione, della caparbia e della speranza sia accesa in me sempre. Mi auguro di raggiungere tutti gli obiettivi che mi sono prefissata e di avere sempre la forza per superare qualsiasi ostacolo. Infine, mi auguro di essere felice, soddisfatta e circondata da persone che amo e che amino sinceramente.*