

The role of communications in tomorrow's world  
**Generating value and cultural change**  
**Innovation and technology for the  
communication of tomorrow's Italy**



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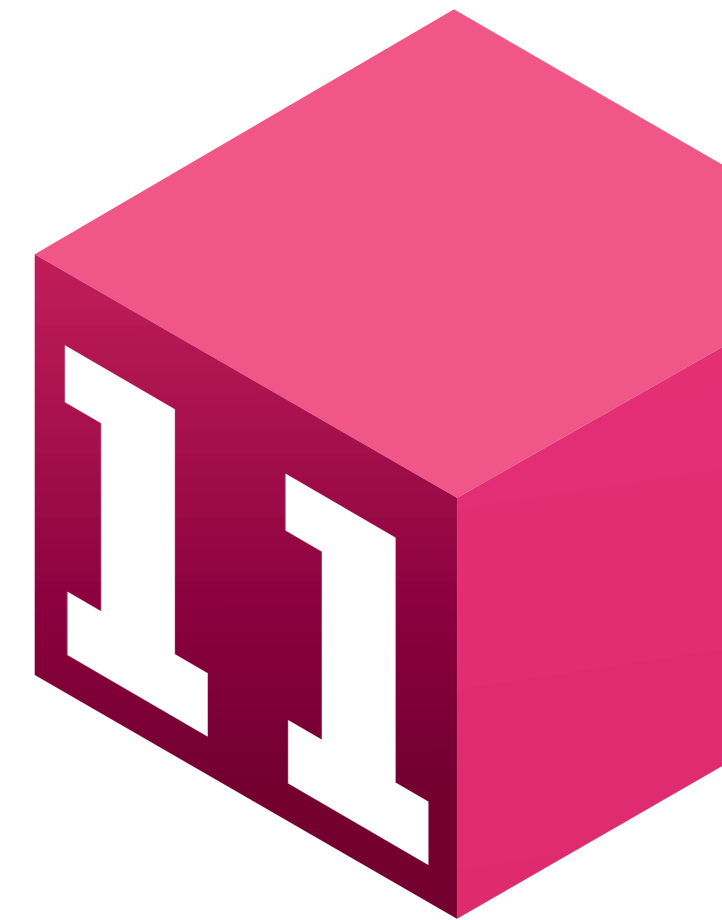
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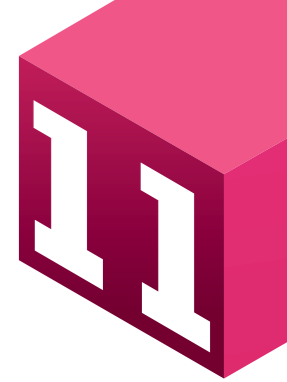
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## CHAPTER 1

# Mission, goals and activities of the 2022 WPP | The European House - Ambrosetti Advisory Board

### 1.1 THE ADVISORY BOARD AND OTHER PLAYERS IN THIS INITIATIVE

This position paper gathers and summarizes the observations and findings of the eleventh year of activity of the WPP | The European House – Ambrosetti Advisory Board, created in 2012 with the goal of providing concrete and informed answers to some of the major challenges facing companies and government and institutions and, at the same time, offering a new perspective on the **role of the communications sector for the nation's growth and competitiveness**.

The project enjoys the support of the Advisory Board including leading individuals in the world of communications and Italian business, all selected for their experience and expertise in the areas under examination and their ability to be authoritative, high-profile opinion leaders in their specific areas.

#### The members of the Advisory Board are:

**MASSIMO BEDUSCHI**

Italy Chairman, WPP

**VALERIO DE MOLLI**

Managing Partner & CEO, The European House - Ambrosetti

**MAXIMO IBARRA**

CEO & General Manager, Engineering

**FABIO LAZZERINI**

CEO, ITA Airways

**CAMILLA LUNELLI**

Communications and External Relations Manager, Cantine Ferrari

**SIMONA MAGGINI**

Italy Country Manager, WPP

**ELISA PAGLIARANI**

General Manager, Glovo Italy

**MARCO TRAVAGLIA**

CEO, Nestlé Italy and Malta

The Advisory Board is an open structure and encompasses the participation during the meetings of outside experts depending on the specific questions to be examined at each meeting. Our thanks for the contributions given during the course of the year also go to:

**ANTONELLO D'ELIA**

Consulting Manager, Business Intelligence & Insight, GroupM Italy

The initiative and position paper are overseen by WPP | The European House – Ambrosetti Working Group, comprised of:

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**LUCA CELOTTO**

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**CARLO MAURI**

Analyst, Business & Policy Impact Practice

**SILVIA LOVATI**

Ambrosetti Club Leader

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Communication, Hill+Knowlton Strategies

**MATTEO GATTO**

Italy Corporate Communications Specialist, WPP

**In undertaking its study and analysis, the Working Group not only carried out its own independent research into specific issues, but also availed itself of the invaluable information contained in other proprietary and non-proprietary documents, listed briefly below:**

1. "2022 Economy and Finance Document", Italian Ministry of Economy and Finance, 2021;
2. "Global Attractiveness Index 2022" report, The European House – Ambrosetti, 2022;
3. "The contribution of social networks and digital channels to the growth and competitiveness of Italian SMEs";
4. "The value of the telecommunications sector to the country system", The European House – Ambrosetti and Wind Tre, 2022;
5. "Next Generation DigITALY: How to promote the integration and development of a digital ecosystem to accelerate the country's innovation and growth", The European House – Ambrosetti and Microsoft, 2022;
6. "NRRP Observatory: one year after launching", Ambrosetti Club, 2022;
7. "Enhancing the digitalization of Public Administration through interoperability and services' evolution", The European House – Ambrosetti and Oracle, 2022;
8. "The data economy in Italy and the role of the cloud for the digital transition", The European House – Ambrosetti and TIM, 2021;
9. "The Public Administration, from roadblock to potential leverage for the growth of the country", Ambrosetti Club, 2021;
10. "Next Generation EU Observatory Release 2.0: a (potential) leverage to relaunch the country", Ambrosetti Club, 2021;
11. "Next Generation EU Observatory", Ambrosetti Club, 2021;
12. "National Recovery and Resilience Plan. #NextgenerationItalia", Italian government, 2021;
13. "Redesigning Italy. Governance Proposals for Changing Italy", Ambrosetti Club 2021;
14. "Relaunching Italy. The 8 proposals of The European House – Ambrosetti Club", Ambrosetti Club 2020.

## 1.2 MISSION, CONCEPT AND GOALS OF THE INITIATIVE

The mission of "The Role of Communications in Tomorrow's World – Generating Value and Cultural Change" initiative is:

**Engaging decision-makers and the business community in high-level reflection regarding the main trends and changes that affect Italy, to be able to guide in an informed way the investment decisions and strategies of those operating in the communications sector, and generate value, employment and growth.**

Each year the Advisory Board examines both a number of specific themes for the

relaunching of competitiveness in the communications sector, as well as major national issues that directly and/or indirectly impact on the performance of communications firms. From this standpoint, it represents a platform for developing **strong messages of change and ideas for Italian growth** aimed at institutions, companies, consumers and, above all, communications firms. In its previous ten editions, the Advisory Board examined a number of priority issues for Italy and its economy.



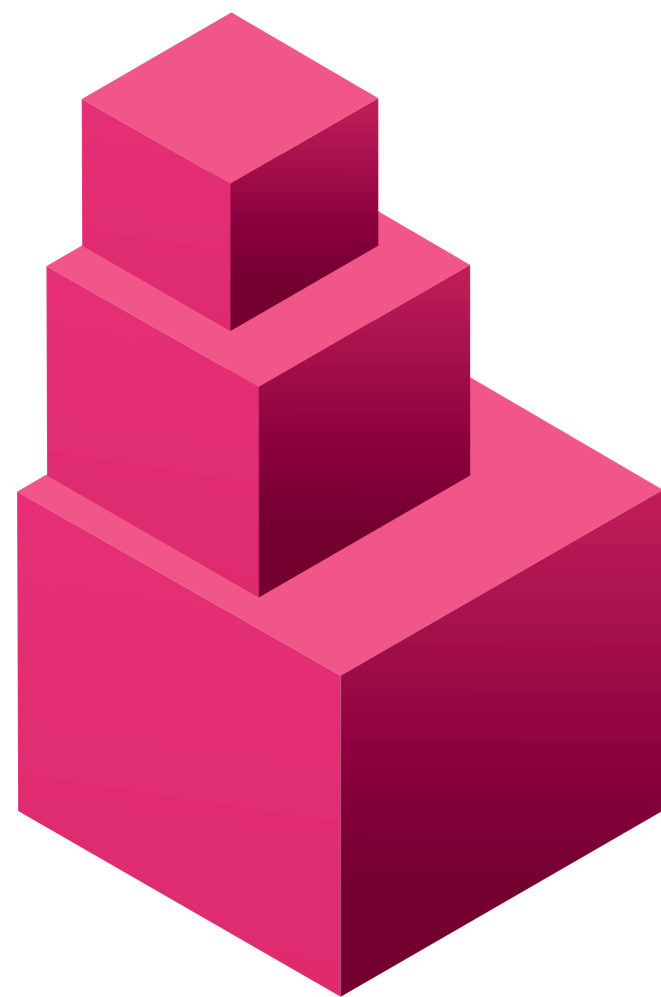
2012-2021		
Relaunching the attractiveness of Italy and its economy: focus on reshoring	The role of brands in the distribution and evolution of the modes of consumption and behavior of Italians	Relaunching competitiveness in the communications sector and relation to Foreign Direct Investments
Attractiveness of Italy and its economy: focus on Foreign Direct Investments	The competitiveness of countries, from digital capitalism to neo-protectionism	Technological innovation and the challenges for measuring communication effectiveness
Attractiveness of Italy and its economy: focus on exports and the North-South gap	Youth and female employment and developing professional skills in Italy	Italy's race towards digital communications
Paths to growth and internationalization of businesses	The role of arts and culture and young people in the nation's future	The Millennial Era: new models of business and consumption
The energy to be tapped to boost the nation's future competitiveness	Environmental protection and safeguarding local areas as paradigms of sustainability and growth	Governance of sustainability and inclusiveness in businesses and the nation
Employment, business and social inclusion: the human factor in the challenges for Italy and its economy	The role of technology in communications of the future	The social responsibility of communication for the relaunch of the country

**Figure 1.1.** Themes examined by the WPP | The European House – Ambrosetti Advisory Board in the past. Source: The European House – Ambrosetti data elaboration, 2022

This year's theme was developed as follows:

### **Innovation and technology for the communication of tomorrow's Italy**

The WPP | The European House – Ambrosetti Advisory Board's work took place against a backdrop of the significant socioeconomic effects of post-COVID and the conflict in Ukraine. After having registered a sustained growth in all major world economies in 2021, growth expectations for 2022 and 2023 have been significantly lowered not only because of the Russia-Ukraine conflict, but also because of the alarming signs on the inflation side. As of July 2022, **inflation in the 19 countries of the Eurozone reached 8.9%**, the highest level in the history of the Euro since its introduction: **15** out of 27 member states already have double-digit inflation rates, and Estonia (**23.2%**), Latvia (**21.3%**) and Lithuania (**20.9%**) are the three countries with the highest inflationary momentum in the EU.



Even before the war, by 2021 inflation had risen in many economies due to soaring commodity prices and imbalances between demand (higher) and supply (lower) caused by the disruption of global value chains during the pandemic. In fact, the interruption of global supply chains and their sudden reopening caused a **bottleneck effect** that challenged companies and supply chains, which were unable to quickly restore pre-pandemic production volumes. Logistical bottlenecks have weighed on global trade, generating price increases in the world's major economies.

Although the "bottlenecks" are expected to eventually ease as production responds to rising prices and new production capacity becomes operational, financial institutions report that supply shortages in some sectors will linger until 2023.

Due to the Russian-Ukrainian conflict, supply slowdowns and disruptions have continued, for example, in the energy and agribusiness supply chains, becoming structural crisis factors in some industrial supply chains also due to the outbreak of the Russian-Ukrainian conflict.

In Italy, inflation is also growing at a very high rate: it is necessary to go back to July 1983 (when a trend change of **+12.2%** was recorded) to find "shopping cart" price growth higher than in September 2022 (**+11.1%** year-on-year). The analysis of July consumer prices clearly reflects how the war in Ukraine has affected the inflationary momentum: in fact, the month-on-month acceleration in prices is driven mainly by the increase in the prices of energy (**+44.5%**) and food products (**+11.5%**), those most impacted by the conflict due to the role of Russia and Ukraine as major exporters of gas and agricultural commodities. Major central banks intervened in response to the inflationary push to contain price

increases, launching tighter monetary policies and also leading to currency readjustments. In fact, for the first time since 2002, the **euro and the dollar reached parity on July 12, 2022**. The weakening of the euro may have significant impact, especially on the cost of commodities in the world's main markets, where the dollar is the trading currency, for example, the energy market. This may cause further price increases for the European market, which is already in crisis due to the conflict in Ukraine.

Finally, tensions between Europe and Russia portend a difficult winter from an energy perspective. The European Union - which used to import **155** billion cubic meters of natural gas from Russia annually (accounting for **38.7%** of total gas needs) - experienced a **75%** reduction in gas flows from Moscow in June 2022 compared to the same month the previous year. Precisely in order to reduce dependence on Russian gas, the European Commission, after the launching of the REPowerUE plan in May, decided to take action on consumption with a new regulation that aims to **reduce gas demand for all member states by 15% between August 2022 and March 2023**.

Alongside an economic picture that, as described above presents quite a few critical elements and uncertainty for the Italian and international economy, positive factors have emerged, suggesting good prospects for a revival and restarting in Italy. These include the consideration that, in Italy as in the other EU27 countries, **inflation is predominantly energy-driven**. In addition, even before the conflict in Ukraine, the European Union allotted 222.1 billion Euros to Italy under the **NextGenEU**, an extremely significant amount of resources (equal to **5.7** times Italy's average annual public investment

expenditure over the five-year period 2015-2019) to support the country's recovery and resilience. Last but not least, the pandemic from COVID-19 has provided **strong impetus to the digitization** of businesses, citizens and the Public Administration, and has made an initial contribution to the spread of a digital culture, both at the Company-System and Country-System level.

Awareness regarding the **digital and technologies opportunities** have been key to the resilience of the economy in the face of pandemic waves and are strategic levers for planning an organic restarting of the economy and improving productivity and competitiveness of Italian companies.

Public and private investments, the grounding of the resources of the National Recovery and Resilience Plan (NRRP), and the concrete actions planned to bridge the digital gaps between geographical areas mean **we can look to the future with optimism and confidence even at a time of great uncertainty** such as the one we are experiencing. Starting from this perspective the Advisory Board therefore focused on the **role of technology and innovation for communications** with the aim of analyzing its transformative impacts, challenges and opportunities to support Italy's revitalization and guarantee the country a more effective international positioning.

In addition – through the pamphlet **"Why Italy is definitely alive & kicking"** and the **Final Forum of November 17, 2022** – the initiative continues to give voice to a number of the most interesting entrepreneurial case studies, examples of Italian success stories and excellence, with the goal of showing international markets how Italy is able to produce value, reinvent markets, construct new business models and propose successful products and services.



**Figure 1.2.** Why Italy is definitely alive and kicking: the Best Cases from previous years.  
Source: The European House – Ambrosetti elaboration, 2022

In the previous nine years and at the Forum held on November 19, 2021, the Advisory Board focused on the various examples of excellence, entrepreneurship and innovation listed above.

The companies featured in the 2022 “Why Italy is Definitely Alive and Kicking” have been selected on the basis of the economic, environmental and social impact of their activity and their contribution to the development and evolution of the local areas and communities in which they operate. Specifically, they have been divided into three groups of companies:

**A. Major companies and multinational investors:** Successful and established Italian and international companies that have distinguished themselves for their ability to generate positive economic, social and environmental impact, thus guaranteeing local growth;

**B. Enterprises with female entrepreneurs and/or managers at the top:** domestic and international enterprises founded or led by female entrepreneurs;

**C. Enterprises of young talent:** smaller Italian and international companies founded by young people who stand out for the high socio-environmental relevance of their economic activities and their contribution to innovation for their target market.

These companies are not necessarily the best in their field nor do they represent the only success stories in Italy, but their strategic, investment and communication choices testify to the strength of Italy, which today, more than ever, is **definitely alive and kicking**. These ten companies join the more than eighty entities featured in previous years. In our opinion, these stories represent examples from which to draw motivation and inspiration to turn challenges into opportunities and to make their growth more solid, inclusive and sustainable. At stake with this challenge is not only the future of generations to come but also the attractiveness of our country today.

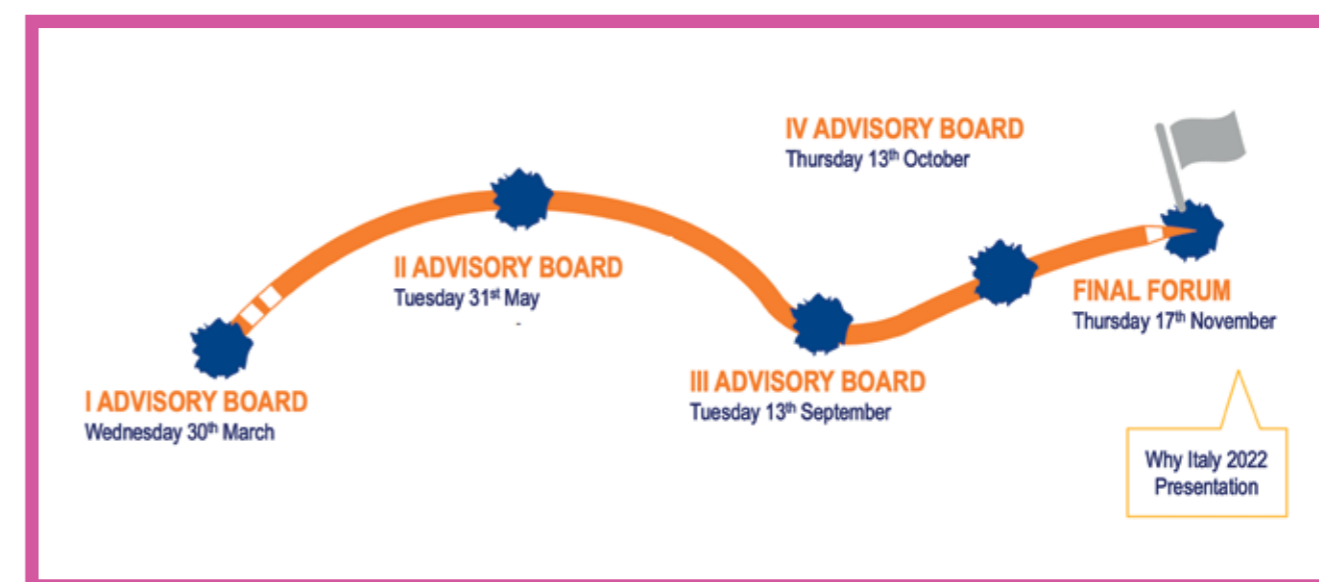
The companies awarded as part of Why Italy 2022 are: Atos, Bending Spoons, BTicino, Cortilia, Galbusera, Glovo, Gruppo MSC, Mulan Group, Musixmatch and Pomellato.



**Figure 1.3.** Why Italy is definitely alive and kicking: the Best Cases for 2022.  
Source: The European House – Ambrosetti elaboration, 2022

### 1.3 PLAN FOR 2022

The activities of the WPP Advisory Board involve four meetings during which to examine and discuss, a high-level international forum (Milan, November 17, 2022) and a number of small one-to-one meetings for in-depth discussion with national and international experts on the issues under examination.



**Figure 1.4.** Scheduled 2022 activities of the WPP | The European House – Ambrosetti Advisory Board.  
Source: The European House – Ambrosetti elaboration, 2022

The working group identified **three priority themes** for reflection, which were explored in depth in the second, third and fourth meeting of the Advisory Board and were the basis for the elaboration of a comprehensive view of the economic situation but also of the role that the various players (policy makers, businesses, communications operators, etc.) can play in the country's revitalization, through a more careful and realistic understanding of all the variables that come into play.

The topics were addressed across the three meetings and covered:

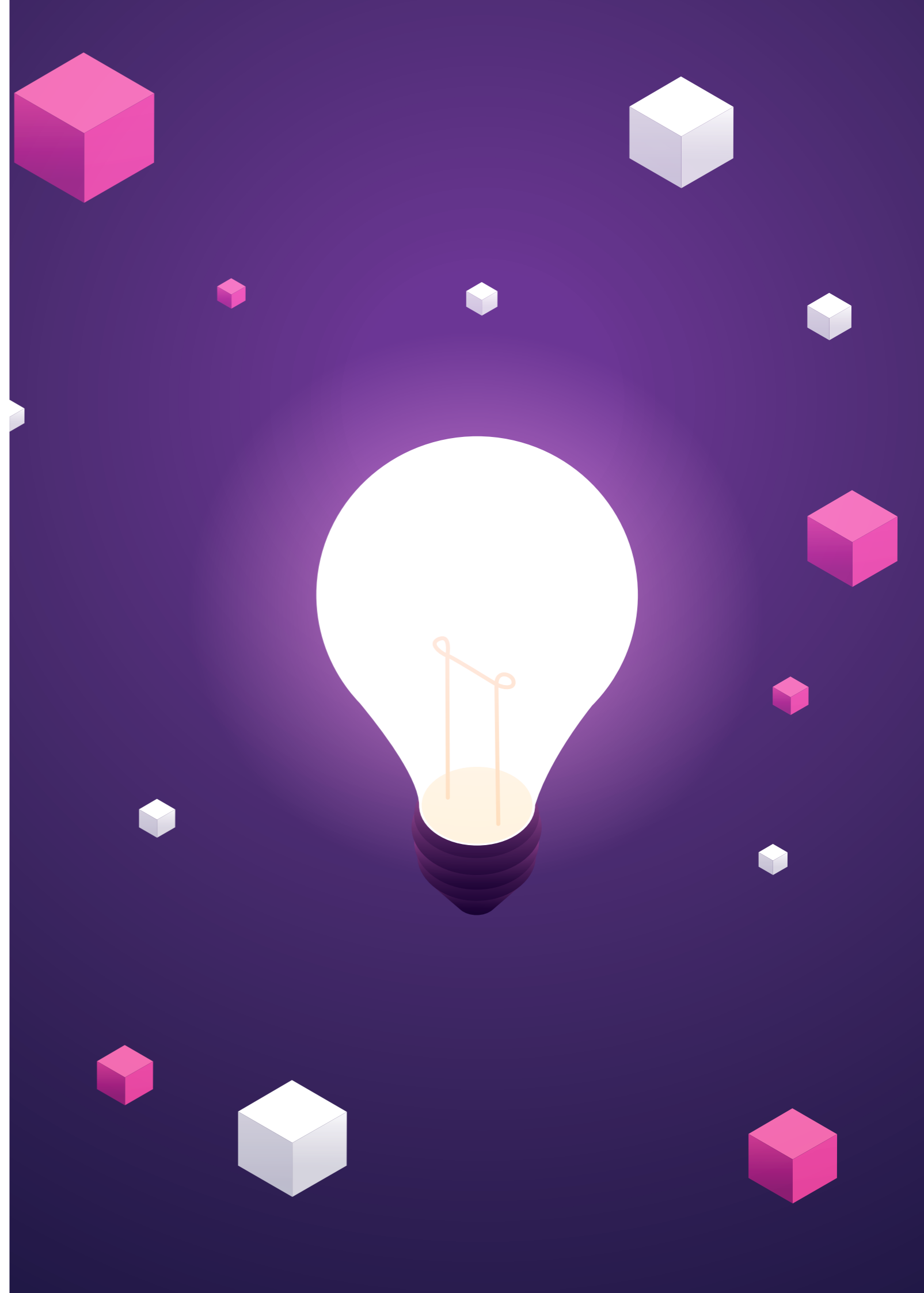
- **The scenario and role of technology and communication for the individual and society** (Milan, May 31, 2022);
- **The new technological standards and opportunities for development and growth for the Company-System** (Milan, September 13, 2022);
- **Innovation ecosystems, infrastructure and prospects for the Country-System** (Milan, October 13, 2022).



**Figure 1.5.** Themes examined by the WPP | The European House – Ambrosetti Advisory Board  
Source: *The European House – Ambrosetti elaboration, 2022*

The main findings were summarized in the three Position Papers and presented and discussed in the eleventh forum entitled **“The Role of Communications in Tomorrow’s World – Generating Value and Cultural Change”** (Milan, November 17, 2022).

This forum has become a regular opportunity to discuss strategic issues affecting the future of the nation, thus becoming a key point of reference for all major players in the Italian communications sector.





## CHAPTER 2

# The scenario and the role of technology and communication for the individual and society

### 2.1 THE CENTRAL AND TRANSFORMATIVE ROLE OF TECHNOLOGIES IN THE LIVES OF INDIVIDUALS AND SOCIETY

The technology that has most driven social and cultural change over the last twenty years is, in all likelihood, the Internet.

Some numbers testify to how much this technology has entered our lives: between 2001 and 2021, in Italy, **individuals connected to the web** went from representing **27%** of the country's population to **77.1%**, a **2.8-fold** growth, higher than that of the European Union (**2.3** times) and benchmark countries<sup>1</sup> (**2.2** times).

Looking at the percentage of Internet users who connect on a daily basis, the data outline an even more disruptive growth scenario: between 2001 and 2021, daily Internet users went from representing **7.1%** of the population to **63.4%**, an increase of **8.9** times, more than double the average of the European Union (**4.0** times) and benchmark countries (**3.9** times).

<sup>1</sup> In this document, benchmark countries refer to the average among France, Germany and Spain.



**Figure 2.1.** Individuals using the Internet every day in Italy (% of total), 2001-2021.  
Source: *The European House – Ambrosetti elaboration of ISTAT data, 2022*

More recently, the COVID-19 pandemic has accelerated the already fast-moving process of Internet penetration.

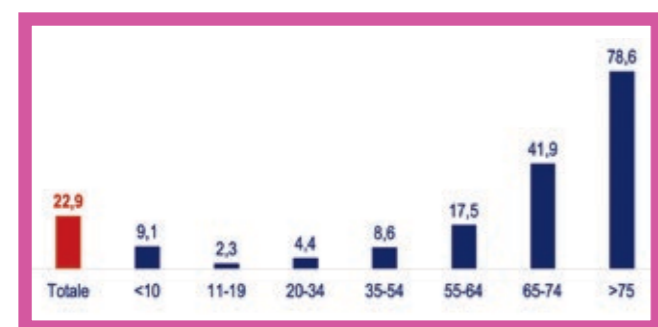
In Italy, between 2001 and 2019, the average annual increase in users connected to the Internet on a daily basis was **2.6** percentage points; restrictions on the mobility of individuals, and therefore the need to connect via the Internet and work remotely, led to an annual increase of almost double the historical trend, reaching **4.4** percentage points between 2019 and 2021.



If, on the one hand, in terms of adoption, Italy still registers a gap compared to the average of the European Union and benchmark countries both in terms of connected users (respectively, equal to **-8** and **-10** p.p.) and of connected users on a daily basis (respectively, equal to **-18.6** and **-19.6** p.p.), on the other hand, the growth in adoption rates recorded in Italy has been more disruptive and sudden compared to the international context, and has therefore marked a significant **turning point** compared to the past in terms of individuals' habits and their social and cultural references.

The adoption of the Internet has not taken place homogeneously on either a generational or territorial level. Therefore, given the role of the Internet as a communication vehicle and a lever for the social revival of the country, it is important to consider the many facets of this phenomenon and its and heterogeneous aspects.

As illustrated above, the Internet penetration<sup>2</sup> in the Italian population of **77.1%** is significantly polarized across **age groups**. According to 2021 data, in Italy, **nine out of ten** children (under 10) connect to the Internet, while **eight out of ten** elderly people (over 75) do not. If, on the one hand, the fact that a large majority of young people connect to the Internet imposes challenges at the national level in terms of education on the correct use of technologies and the assessment of potential impacts, on the other hand, the low rates of Internet adoption and use by the elderly impose a challenge for the **digital inclusion** of these population groups, primarily



**Figure 2.2.** Individuals not using the Internet by age group in Italy (%), 2021.  
Source: *The European House – Ambrosetti elaboration of ISTAT data, 2022*

through the diffusion of digital skills, to enable their access to increasingly- digitalized essential services. Differences in Internet access are also significant on a geographical level. In fact, disparities in access can be observed at both **municipal and regional level**. In small municipalities (less than two thousand inhabitants), where investment in digital infrastructure has occurred later than in other municipalities, the share of individuals connected to the Internet is **6** percentage points lower than in large municipalities (more than fifty thousand inhabitants). In particular, in municipalities with less than ten thousand inhabitants, **4.5** million individuals still do not access the **Internet**. **Southern Italy** is also affected by regional disparities, primarily due to infrastructural shortcomings, which have inhibited the growth and development of a digital ecosystem.

By way of comparison, the gap recorded in Italy between the best- and worst-performing regions in terms of penetration is **14** percentage points (Valle d'Aosta with 87% vs. Sicily with 73%), a figure higher than in France where the gap is **11** percentage points (Corsica with 96% vs. Guadeloupe with 85%), Germany, where the gap is **8** percentage points (Berlin with 95% vs. Bremen with 87%) and Spain, which records a gap of only **7** percentage points (Ciudad de Melilla with 97% and Galicia with 90%).

The rapid acceleration of Internet adoption has led to an increasing use of the services offered by digital platforms, thus generating an evolution in society's **consumption habits**.

In fact, individuals are now increasingly oriented towards the digital world in terms of online purchases, an epochal change that affects a large part of the retail world. In 2021, in fact, almost **four out of ten** Italians purchased goods or services online. This share has grown **3.5** times since 2012 (when the figure was **11%**), a rate higher than both the European Union average

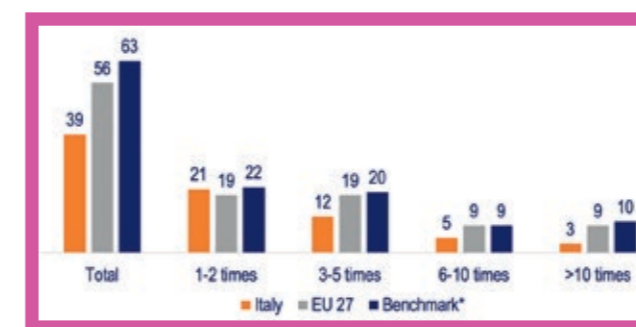
(**1.8** times) and benchmark countries (**1.6** times). Looking ahead, online shopping will not only affect an increasing portion of the population, but will embrace **more product types**, leading individuals to purchase more frequently via digital platforms.

In particular, **physical goods**, which were initially sold on the Internet to a lesser extent than **digital services**, have seen online sales accelerate faster than services over the past decade.

As an example, the share of individuals buying clothes on the Internet has increased from **5%** in 2012 to **23%** in 2021, thus growing **4.6** times over the period. This growth is double that of individuals booking travel online, up **2.3** times over the period (from **7%** in 2012 to **16%** in 2021).

When compared with the average of the European Union and benchmark countries, it emerges that the **frequency of online purchases** in Italy today remains at one or two purchases per quarter, and will tend to converge towards higher purchase frequencies, in line with other countries.

Currently, in fact, only **3%** of Italians have purchased more than ten products in the last three months (vs. **9%** in the European Union and **10%** in benchmark countries).



**Figure 2.3.** Population by number of products purchased online in the last three months in Italy, the EU27 and benchmark countries (%), 2021.  
Source: *The European House – Ambrosetti elaboration of Eurostat data, 2022*

The digital services offered on the Internet, and in particular on social media platforms, have also had a significant impact on a **cultural level**, marking a break with the past.

The sharing of content and opinions on a global scale and the accessibility of communication between individuals have in fact led to an evolution of the references and paradigms of today's society, expanding the area of cultural sharing from a continental (European) to a global dimension.

In this perspective, **it is young people who drive the evolution of cultural references**, both because of a greater diffusion of the Internet, as seen above, and a higher rate of use of the services offered.

In fact, the average weekly time of use of social networks by age group shows important differences at the generational level: Gen Z (18-26 years) use social networks on average for **3.6** hours per week, while Millennials (27-41 years) use them for **2.3** hours per week, Gen X (42-57 years) for **1.4** hours per week and Boomers (58-76 years) for **1.1** hours per week.

The transformation of habits affects the youngest segments of the population, and it is therefore crucial to consider **this change as a long-term paradigm shift**, which will be consolidated generation after generation.

The media are therefore affected by a **radical transformation**, both in terms of where to come into contact with younger individuals, as well as the language to be adopted.

One prime example is the statistics on marketing campaigns: in 2021, **31%** of Gen Zs became aware of a brand through social media, **11** percentage points more likely than Boomers,

<sup>2</sup> Number of individuals who are connected to internet divided by the total population.

while only **28%** of Gen Zs became aware of it through TV channels, **12** percentage points less likely than Boomers. Among the new digital spaces with the potential to transform current

relational and consumption paradigms, we should definitely mention the **Metaverse**, the virtual world based on technologies such as Virtual Reality and Augmented Reality.

### A new paradigm: the Metaverse

The around ten Metaverse worlds that exist today are virtual worlds created by software development companies in which people, through their **avatars**, can **interact and have 360° experiences**, including travel, museum visits, online shopping, interactive games, remote work, sporting events, concerts and conferences. Conceived and conceptualized for the first time in 1992 by Neal Stephenson in his novel Snow Crash, the concept of the Metaverse has only materialized and spread on a global scale in recent years, starting with the symbolic date of **April 23, 2020**, when the first major international concert organized on a virtual world (held by US singer Travis Scott) took place.

In virtual spaces, **crypto-currencies** are used predominantly, with which digital goods and services can be purchased (e.g., products for customizing one's avatar, transport, paintings, luxury goods, Non Fungible Tokens or NFTs, etc.). Within Metaverses, **digital land** can also be bought on which to establish a personal 'virtual home' or business.

In 2021 alone, a total of **\$620** million worth of land was sold globally (increasing by **38.5%** between December 2020 and December 2021) at a price per square meter of, for example, about **one-third** of the building land for sale in the province of Milan. Again in this new frontier, it is young people who are driving the change. Compared to Boomers, the percentage of **Gen Z** interested in participating in activities taking place on Metaverses is **10.7** percentage points higher, a gap that stands out particularly with respect to social applications, interactive games, shopping and participation in sporting events.

*Source: elaboration by The European House – Ambrosetti on YouGov Italia, Coinbase and other sources, 2022.*

## 2.2 THE OPPORTUNITIES FOR INDIVIDUALS AND SOCIETY ENABLED BY THE NEW PARADIGMS

New technologies, both physical and digital, **can be fundamental drivers for the development of society** because they enable new connections between individuals, reduce the barriers of physical accessibility and offer significant support for inclusive development on a global scale.

This consideration is confirmed by the Smart Home, Smart Cities, Smart Grid and Smart Mobility paradigms, which are able to generate **positive impacts on society and the environment**.<sup>3</sup>

The Smart Mobility paradigm, for example, can potentially lead to a zero-accident rate, a particularly relevant factor if we consider that every day, in Italy, an average of **8** people die as a result of road accidents<sup>4</sup>.

In addition, Smart Mobility offers important possibilities for reducing traffic and travel times. All **four paradigms** mentioned above are also able to generate significant and positive impacts on the environment, enabling **significant reductions in CO<sub>2</sub> emissions** in the following areas:

- **Homes**, with savings of up to **-20%** in energy consumption required for heating and lighting (Smart Home);
- **Large urban centers**, responsible for **75%** of the country's total CO<sub>2</sub> emissions (Smart Cities);
- **Energy generation and distribution**, enabling interconnection between users and energy

generators from a prosumer (producer and consumer) perspective and thus reducing grid dispersion, which in Italy amounts to **6.3%** of national energy production (Smart Grid);

- **Mobility**, thanks to reduced traffic and a more constant and optimal travel speed (Smart Mobility).

**Digital Public Administration** is also an extremely important area of development, especially in a country where historically relations between the P.A. and private individuals (citizens and businesses) have suffered serious setbacks due to inefficiency and excessive bureaucracy.

Already today, **30** million Italians can interact with the P.A. through the Public Digital Identity System (known as **SPID** in Italy), with a significant reduction in the time required to execute tasks, a reduction in procedural errors, the overcoming of the need to provide the same information several times to the same body, and savings associated with the reduction of CO<sub>2</sub> emissions (thanks to the reduction of travel to and from public offices).

More generally, technology and digitalization are able to promote **new service models** within the P.A. One of these is "Government as a Platform", which streamlines services by integrating information systems, standards, technological components and APIs (Application Program Interfaces, protocols that enable the exchange of data between different sources).

<sup>3</sup> For more details, see: The European House – Ambrosetti, "Super Smart Society: towards a more sustainable, resilient and human-centric future", 2022; The European House – Ambrosetti & TIM, "The Data Economy in Italy and the Role of the Cloud for the Digital Transition", 2021; The European House – Ambrosetti & OCTO, "Connected Mobility 2025", 2021.

<sup>4</sup> Source: The European House - Ambrosetti elaboration on Istat data.

Furthermore, the use of the Internet has made it possible to **eliminate physical barriers to the accessibility of information, services and products**. Considering that in Italy there are **3.1 million disabled individuals (5.2% of the population)**—of whom **1.6 million are over-75 (22% of the population in that age group)**—the ability to remotely access information, services (including public services) and products, as well as carry out work activities, represent a concrete opportunity for this segment of the population to have their citizens' rights (including the right to personal freedom, the freedom to express one's thoughts, the right to work and the right to education<sup>5</sup>) guaranteed, as well as to cultivate social relations through social platforms.

In addition to physical barriers related to the health of individuals, there are also **economic barriers to the accessibility** of work and services. Today, **14%** of the employed in Italy reside in the provinces of Rome and Milan, whose rental prices in the provincial capitals exceed the national average and weigh significantly on disposable household income.

In Rome, the average rent is **€19.58 /sqm** per month (1.7 times the national average) and in Milan, it is **€23.52 /sqm** per month (2.1 times the national average). An average household intending to move into a 50 square meter apartment in Rome or Milan would see its disposable income fall by **15 percentage points** in the case of Rome and **23 percentage points** in the case of Milan.

From this perspective, **smart working** offers households the opportunity to save on apartment rent and consume more resources in goods and services for the family, stimulating the economy

<sup>5</sup> In Italy, only one school out of three is accessible for pupils with motor disabilities. In the North of the country, values are higher than the national average (36% of schools in compliance with standards), while the figure worsens, reaching the lowest levels, in the South (27%). The most virtuous region is Valle d'Aosta, with 63% of accessible schools, while the Campania stands out for having the lowest number of schools without physical barriers (21%). In the job market, in 2021, employment rate of individuals with severe disability limitations was only 32.2%, compared to 59.8% of individuals without health limitations. Moreover, only 14.4% of people with disabilities travel by urban public transport, compared to 25.5% of the rest of the population.

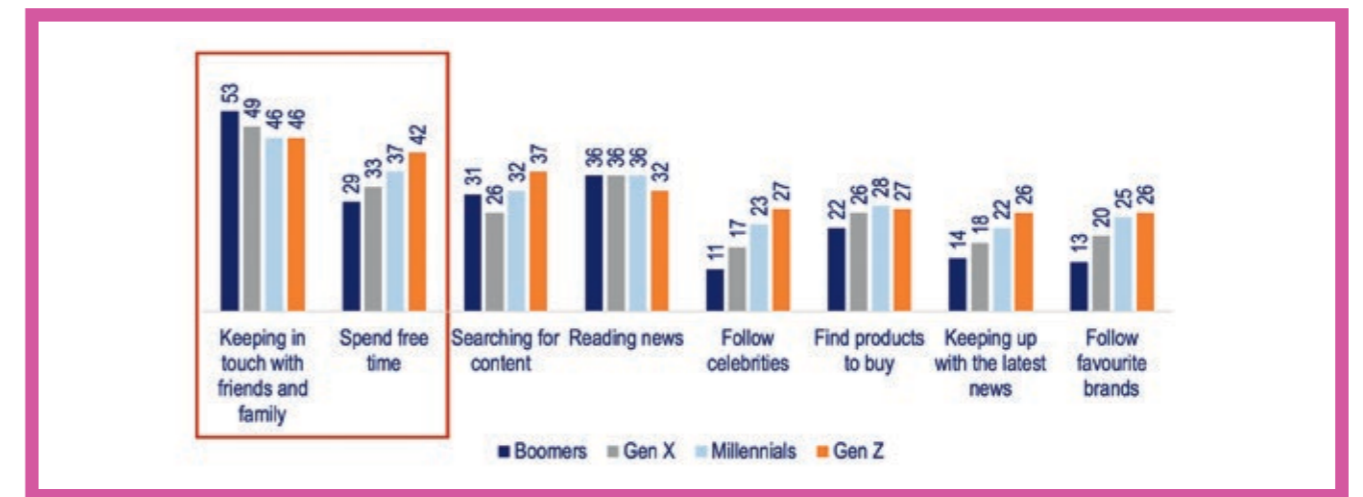
and redistributing consumption demand more evenly across Italy.

In the field of welfare, **telemedicine** has also offered a fundamental social contribution to the healthcare of patients, especially during the pandemic, and was initially **intended as a substitute** for physical visits by the National Health Service.

As evidence of this, only **15%** of the patients who received telemedicine services during the pandemic resided in the same municipality as the healthcare provider, and the average distance between home and hospital amounted to 70 kilometers.

These figures show how the potential benefits of telemedicine do not end, therefore, with the pandemic emergency, and also thanks to NRRP resources (1 billion euros for telemedicine projects) it is now possible to configure **telemedicine as complementary** to physical services, in light of the success of this practice during the pandemic and its social impacts, in terms of accessibility for the elderly and disabled, reduced waiting and travel time, and environmental impacts, in terms of CO<sub>2</sub> emissions avoided.

In addition, regarding young people, digital platforms represent a resource for them in terms of **social interaction and current affairs**. In fact, younger population groups show a tendency to use social media more focused on entertainment, and they also show greater trust in these platforms to inform themselves about current affairs. Among Gen Z, compared to Boomers, there are **16 p.p.** more individuals who use social media to follow celebrities, **13 p.p.** more who use it to spend their free time, and **11 p.p.** more who use it to stay up-to-date on news.



**Figure 2.4.** Main reasons for using social media by age group worldwide (%), 2021. Source: The European House - Ambrosetti elaboration of GWI data, 2022

Access to the wealth of information of Internet search engines, the speed of news circulation, and the plurality of sources offer all individuals an unprecedented possibility to **make informed choices in purchasing goods and services**, individual learning at all ages (thanks to the

possibility of quickly delving into topics of interest), and the defence of **public debate and democracy** in non-authoritarian countries of the world,<sup>6</sup> to ensure the free flow of ideas and information that constructively monitor and challenge government activity.

<sup>6</sup> Countries where there are no restrictions on the free transmission and circulation of information.

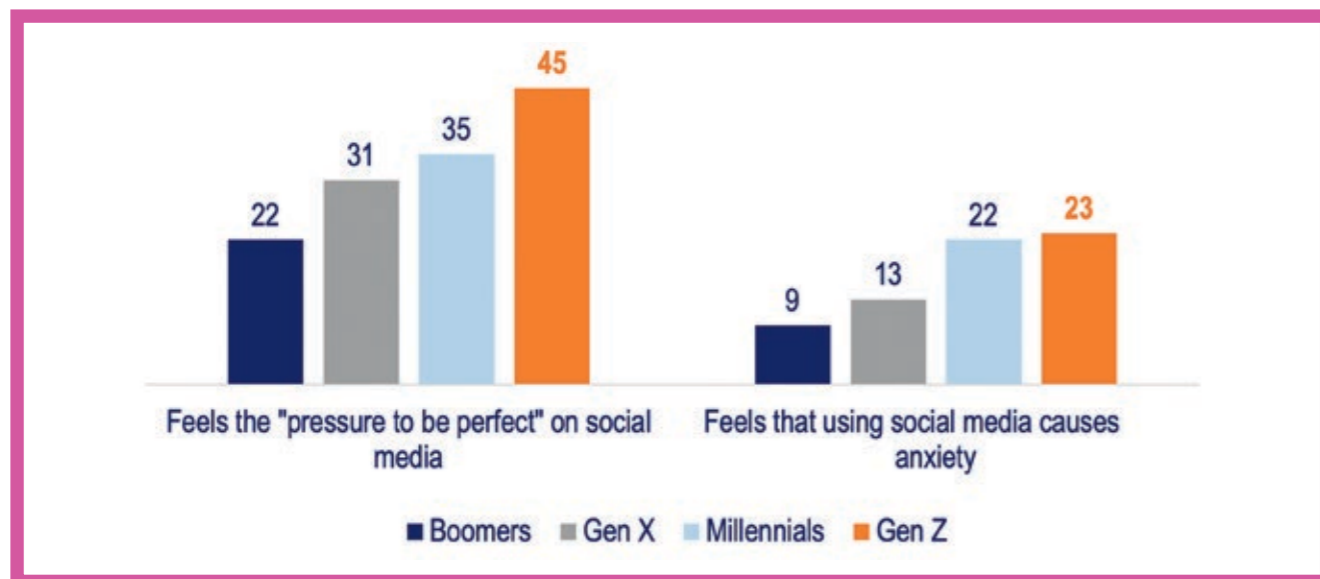
## 2.3 RISKS FOR INDIVIDUALS AND SOCIETY ASSOCIATED WITH NEW TECHNOLOGIES

However, new technologies are also associated with **risks, negative spin-offs and potential harm** to individuals and society, which primarily affect the population groups that are already most vulnerable.

Despite being the main users, **young people do not seem to be fully satisfied with the new digital paradigms** and suffer several negative “drawbacks”. There is concern about the amount of time users spend on social networks: **36%** of

Gen Z believe they spend too much time on social networks, **8 p.p.** more than Millennials, **13 p.p.** more than Gen X and **20 p.p.** more than Boomers.

The overall levels of satisfaction of generations with the use of social networks, increasing by age group, experience a negative peak for Gen Z, marking a gap of **-7 p.p.** in the share of individuals who believe social networks are good for society compared to the previous generation (the Millennials).



**Figure 2.5.** Users concerns regarding the use of social networks by age group in the world (%), 2021.  
Source: The European House – Ambrosetti elaboration of GWI data, 2022

Among the main causes of young people's dissatisfaction with social networks is “**digital anxiety**”, which leads them to feel “inadequate”: **45%** of Gen Z users of social networks (**21 p.p.** more than Boomers) feel a **pressure to be and show themselves to be perfect** on social platforms, thus suffering the psychological effects. In addition, **23%** of Gen Z users say they experience anxious consequences from using

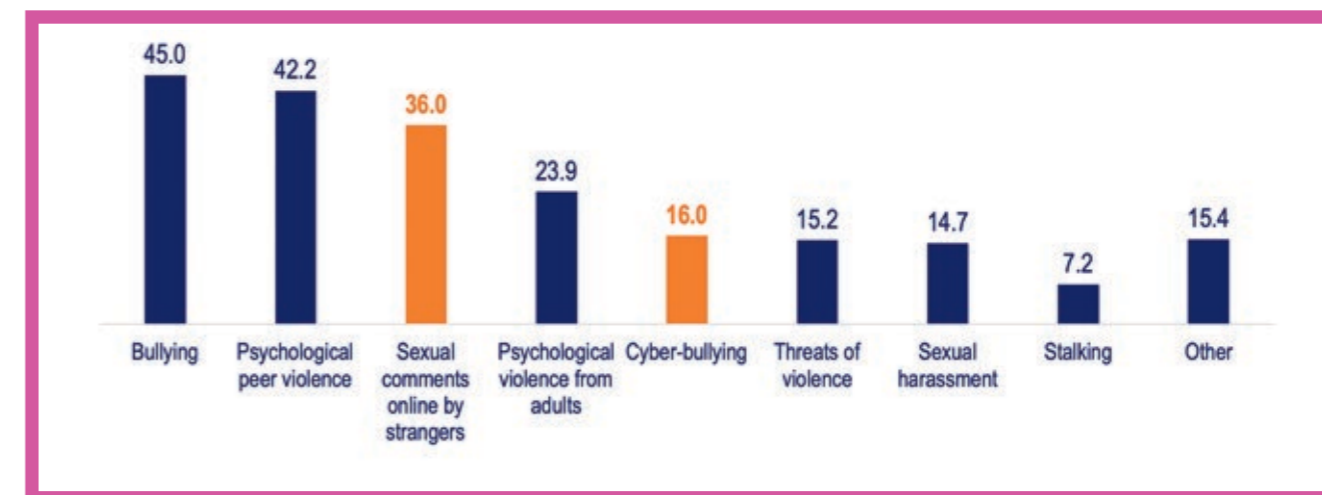
social media, a **14 p.p.** higher share than Boomers.

In addition to the concerns of young users, there are additional **negative attributes** associated with prolonged use of social networks, including a lack of interpersonal interaction and sharing with other individuals (found in **41%** of users), fatigue as a result of prolonged screen viewing (found in **39%** of

users), and a lack of full control over the content one is “forced” to view (found in **33%** of users).

Serious **risks to the personal safety** of connected users can also arise in digital environments. Sexual comments from

strangers and cyber-bullying are respectively the third and fifth most-frequent causes of violence against young people,<sup>7</sup> and are experienced by **36%** and **16%** of young people, respectively. In total, **24%** of incidents of violence and bullying among young people occur online.



**Figure 2.6.** Young victims of violence by type of violence in Italy (%), 2021.  
Source: The European House - Ambrosetti elaboration of Terre des Hommes data, 2022

In terms of **young user perception of personal safety**, within both physical and digital environments, it emerges that online dating apps and social media are perceived as the third and fifth least-safe places. There are **five main causes** of concern for young people in digital environments: cyber-bullying (for **66.3%** of young people), revenge-porn (**49.5%**), harassment and approaches from strangers (**46.9%**), loss of privacy (**45.8%**) and stalking (**36.7%**).

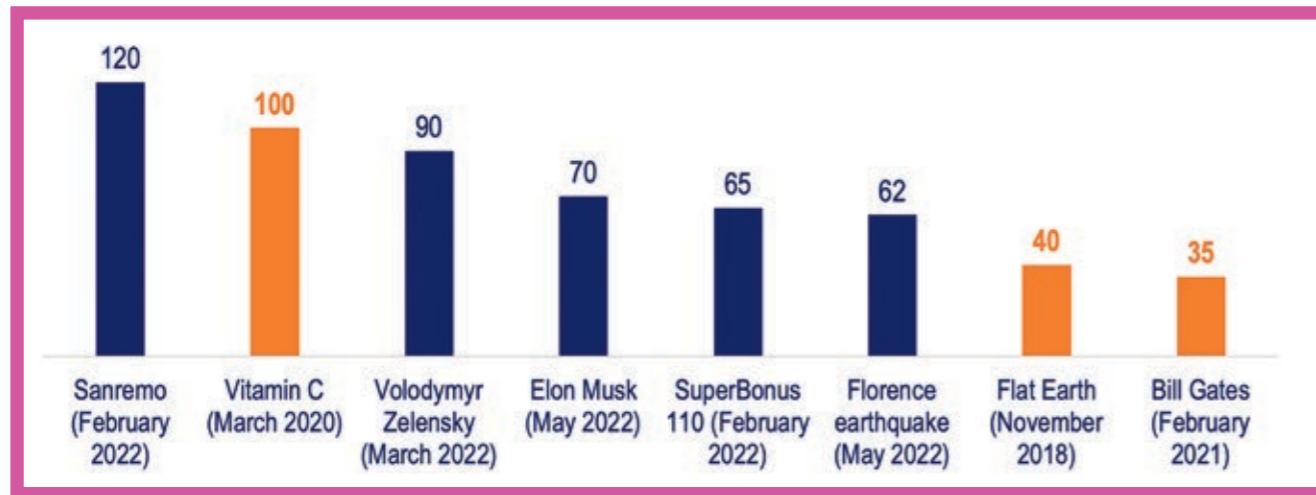
In particular, in Italy, **35.2%** of young people claims to have seen images or videos with sexual content online depicting themselves or their friends on the web. Moreover, in 2021, **2,800** reports of Revenge Porn were made in Italy, an increase of **78%** compared to 2020.

The extreme seriousness of this growing form of digital violence weighs significantly on the

psychological exposure of the victims: young people who consider the dissemination of their own sexually explicit images online as serious as physical violence are in fact almost the entirety, with the share rising from **76.8%** in 2017 to **93.9%** in 2020, up **17.1** percentage points over the period.

Other potential negative effects include those related to the spread of **fake news**, which rapidly invades the web and risks influencing the activities of individuals. For the sake of comparison, in addition to the other examples given in the chart below, the fake news that taking large amounts of Vitamin C could reduce exposure from COVID-19, which emerged during the pandemic, spiked higher than Volodymyr Zelensky's maximum daily searches in February 2022 at the outbreak of the war in Ukraine.

<sup>7</sup> Young people are here defined as individuals aged between 13 and 23.



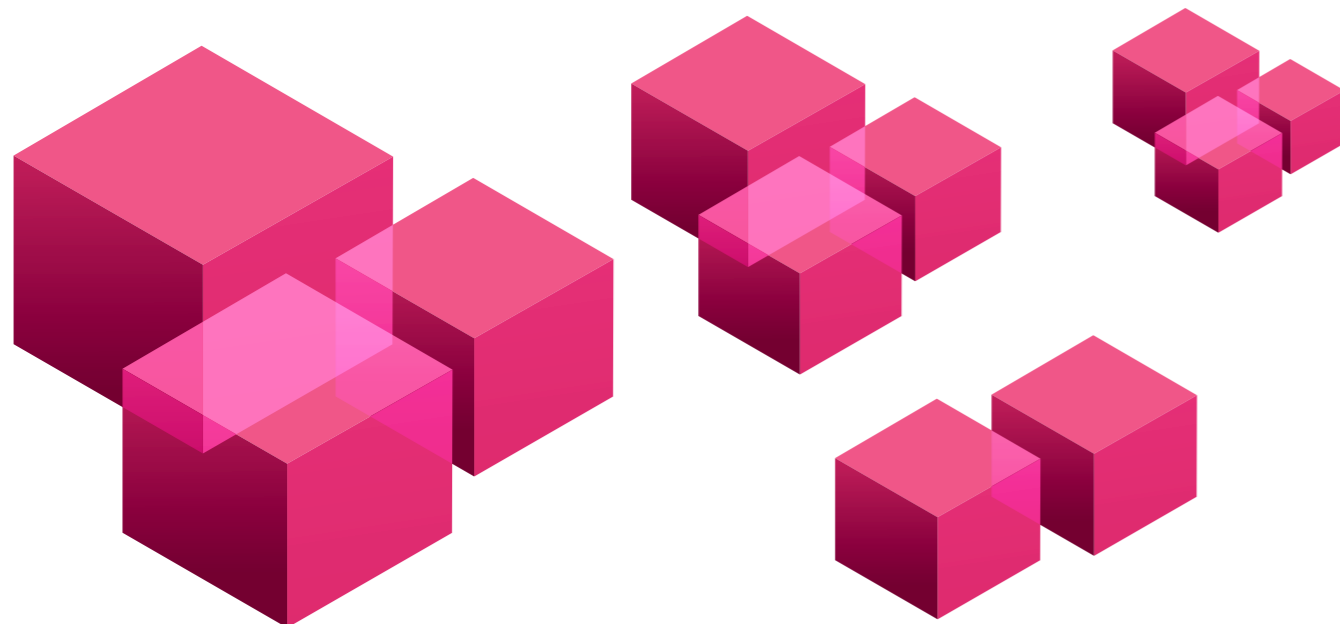
**Figure 2.7.** Number of searches on the peak day for some fake news (orange) and comparable objective search terms (blue) (thousands searches/day), 2018-2022.  
Source: The European House - Ambrosetti elaboration of Google Trends data, 2022

The phenomenon of fake news is determined by several causes, which fuel its rapid spread through social information channels:

- First and foremost, a **cultural issue** that leads **82%** of Italians to be unable to distinguish real news from fake news;
- In Italy, the phenomenon is then accentuated by a widespread perception that a piece of news is **more reliable if shared by a large number of users** (an aspect found in **60%** of Italians), which

therefore fuels a vicious circle that is self-sustaining when a piece of fake news goes viral on the Internet;

- The **free-of-charge nature** of most online information services can impact the quality of news, which therefore risks being misrepresented by users. In Italy, **seven out of ten individuals** inform themselves exclusively through these information sources, and only **one in four** is willing to pay to access information they trust.



### Digital subscriptions and quality: the rebirth of *The New York Times*

*The New York Times*, an American newspaper founded in 1851, decided in 2008 to focus on the online world, investing considerable resources in the development and maintenance of an app for the use of online content, thus moving **against the trend in the sector**.

Thanks to a commitment to information quality and to a remodelling of its offer, capable of differentiating between print and online editions in terms of both content and graphics, *The New York Times* has succeeded, in a market context of sharply reduced margins, in **generating profits by promoting quality journalism**. Today, in fact, *The New York Times* has more than **8 million** digital subscriptions in **236** countries around the world, an increase of **1.3 million** by 2020 (+18.9%), **181 million** daily podcast listeners in 2021 and a turnover of **\$2.07 billion**, up **16.3%** in the last year. In 2020, for the first time in history, revenues generated through advertising and online subscriptions exceeded those from print editions (**\$826** vs. **\$760** million, respectively). Today, the gap has widened even further, with the results from online services **39%** higher than from traditional products (respectively, **\$1,081** vs. **\$777** billion), thus succeeding in re-establishing itself as a **key player in the publishing sector in the digital world** and disseminating reliable and quality information worldwide.

Source: elaboration The European House – Ambrosetti on *The New York Times* data, 2022.

The spread of social networks has also changed young people's cultural references and led to the **proliferation of information sources** with the emergence of new opinion leaders. While this phenomenon can be understood in a positive sense, as a democratic and free expression and sharing of ideas, there is also a potential negative effect that it is important to emphasize, namely the risk arising from the explicit or implicit discrediting of traditional and scientific information sources, as well as the denigration of "technicians" in the public debate.

Finally, regarding the social aspect related to work, in the context of **smart working**, there are concrete risks regarding possible gaps and **social friction between workers** who,

depending on their profession, can or cannot afford to work remotely. In particular, workers who perform predominantly intellectual tasks, who tend to be better educated and better paid, can perform their work remotely with productivity levels that are comparable to face-to-face work, and can therefore take advantage of smart working. On the other hand, workers who perform predominantly physical tasks, such as shop assistants, factory workers and distributors, who are typically less educated and lesser paid, would not be able to take advantage of smart working, due to the very nature of their job responsibilities.<sup>8</sup> Special care must therefore be taken, when shaping company policies, not to create differences between "first-class" and "second-class" workers.

<sup>8</sup> In 2019, in Italy, an employee with a university degree or a doctorate earns, on average, a 35.4% higher salary than an employee with a high school diploma, and +59.9% higher than an employee with a secondary school diploma. In addition, at the level of contractual qualification, a clerk or manager earns, on average, a 59.3% higher salary than an employee with a blue collar qualification. Source: elaboration by The European House – Ambrosetti of ISTAT data, 2022.

As can be seen from the points discussed above, **digital platforms** play a key role today with regard to the most important and innovative initiatives on the global scene.

The relevance of the data collected and the high degree of competition that characterizes the digital platform market, and in particular the “winner-take-all” phenomenon (where industry leaders are able to absorb almost the entire market through their own offerings), nevertheless entail some areas requiring attention, also with respect to societal developments. In fact, the high barriers to market entry, in terms of the investment required, generate real risks of the establishment of **dominant market positions** and real monopolies.<sup>8</sup> Structured in this way,

these markets can pose a risk to citizens and consumers, who reveal their tastes and entrust their information to a few private and foreign players.

On the other hand, the creation of **open and interoperable ecosystems**, based on the paradigms of openness, interoperability and transparency, can be an effective strategy with which to address these risks and to promote inclusive and sustainable societal development.

<sup>8</sup> Source: The European House - Ambrosetti elaboration of DG Competition data, 2022.





## CHAPTER 3

# The new technology standards and opportunities for development and growth for the Company-System

### 3.1 THE STATE OF TECHNOLOGY AND DIGITAL ADOPTION IN ITALY

The low rate of digitalization represents one of eight structural problems in our country, namely those criticalities (and, at the same time, potential levers of development) for which it is historically necessary to intervene with reforms and policy measures aimed at a change of direction.

From the perspective of The European House – Ambrosetti, they are:

- **Stagnant productivity:** productivity in Italy has had an average growth rate of **0.2%** over the past 20 years (**6 to 7** times less than other EU-27 countries);
- **Low propensity for private investment:** the ratio of private investment to GDP in Italy is between 20 and 30 lower than in other European Union countries;
- **Low wage levels:** Italy is the only OECD country that has reduced real wages in the last three decades (**-2.9%**) and households in absolute poverty by 2022 could be **8.8%** (**+1.3 p.p.** compared to 2021);
- **Critical infrastructure and logistics issues,** especially in the South;
- **Female labor participation rate:** in Italy it is **54.7** percent compared to **67.6%** in the EU-27 average;
- **Functional illiteracy:** Italy has a high incidence of adults lacking upper secondary education (**37.1%** in the 25-64 age group compared to the OECD average of **19.6%**);
- **Labor market:** in Italy the unemployment rate is **9.4%** (compared to the EU average of **7.2** percent) and the share of NEETs over the total population is **23.1%** (compared to the EU average of **13.1** percent);
- **Digital:** in addition to the other data presented in this paper, Italy is **18<sup>th</sup>** in the EU-27 in the DESI index.

With reference to this last area, Italy ranks at the bottom in terms of the level of digital adoption by companies, showing a strong lag behind European levels. Italy is **18<sup>th</sup> out of 27** for Digital Intensity of companies at the European level, and in 2021, **80%** of companies in Italy registered a low or very low level of Digital Intensity. More specifically, Italy ranks below the EU-27 average and benchmark countries in **10 out of 12** of the Digital Intensity Index KPIs, listed below:

- In Italy, only **64.3%** of companies have more than 50% of workers connected to the Internet for work purposes (**-8 p.p.** compared to the EU-27 average and **-9 p.p.** compared to benchmark countries);
- Firms with at least 1 employee specialized in ICT are only **16%** in Italy (**-3.3 p.p.** compared to the EU-27 average and **-1.7 p.p.** compared to benchmark countries);
- In Italy, only **37.4%** of businesses are connected to a fixed ultra-broadband network<sup>2</sup> (**-12 p.p.** compared to the EU-27 average and **-11.2 p.p.** compared to benchmark countries);
- In Italy, **36.5%** of companies provide mobile devices to more than 20% of employees, a percentage **5.5 p.p.** lower than the EU-27 average and **8.1 p.p.** lower than benchmark countries;
- In Italy, only **73.1%** of companies have a website (**-3.6 p.p.** compared to the EU-27 average and **-4.9 p.p.** compared to benchmark countries);
- Only **56.3%** of companies use a website

to perform sophisticated and professional functions, such as tracking and analyzing consumer preferences (**-7.1 p.p.** compared to the EU-27 average and **-2.7 p.p.** compared to benchmark countries);

- In Italy, only **56.2%** of companies are present on social networks (**-2.5 p.p.** compared to the EU-27 average and **-5.4 p.p.** compared to benchmark countries);
  - Only **8.6%** of companies in Italy take advantage of digital opportunities for B2C business (**-2.1 p.p.** compared to the EU-27 average and **-2.5 p.p.** compared to benchmark countries);
  - In Italy, **71.3%** of companies make more than 1% of their turnover online (**-13.8 p.p.** compared to the EU-27 average and **-11.5 p.p.** compared to benchmark countries);
  - Only **20.6%** of companies in Italy invest in online advertising campaigns (**-4.8 p.p.** compared to the EU-27 average and **-2.9 p.p.** compared to benchmark countries).
- In **2 out of 12** of the Digital Intensity Index KPIs, however, Italy ranks better than the EU-27 average and benchmark countries:
- **51%** of enterprises in Italy have purchased advanced cloud computing services (**+17.9 p.p.** compared to the EU-27 average and **+23.9 p.p.** compared to benchmark countries);
  - In Italy, **94.9%** of businesses sent electronic invoices (**+62.7 p.p.** compared to the EU-27 average and **+66.8 p.p.** compared to benchmark countries).

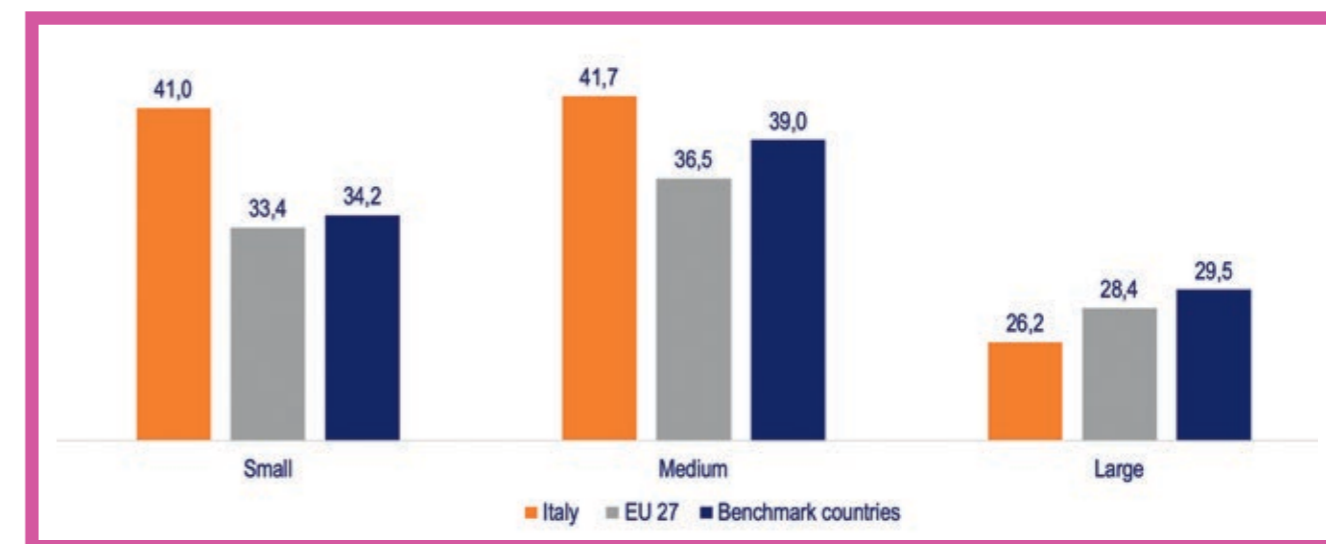
<sup>1</sup> The Digital Intensity Index is an indicator which, out of a total of 12 indicators of digital technology use/adoption, counts how many are satisfied at the company level. The 12 KPIs considered are: Internet use by >50% of workers; ICT specialist skills; fixed broadband speed >30 Mbps; mobile devices used by more than 20% of employees; website; sophisticated website features; social media presence; online sales >1% of turnover; paid advertising on the Internet; cloud computing; and e-invoices.

<sup>2</sup> Defined as the Internet connection that enables a download speed >30 Mbps.

**Firm size unquestionably affects digitization performance.** In fact, the smaller the size, the more difficult it is for the firm to sustain the investment and fixed costs in ICT technology and skills needed to cope with digital transformation.

As can be seen in the graph below, in Italy **41%** of small firms are associated with low levels of digitization, **+7.6 p.p.** compared to the EU-27 and

**+6.8 p.p.** compared to benchmark countries. Although to a lesser extent, Italy also performs negatively regarding medium-sized firms: **41.7%** of **medium-sized firms** are associated with low levels of digitization, **+5.2 p.p.** compared to the EU-27 average and **+2.7 p.p.** compared to benchmark countries. Analyzing **large firms** on the other hand, Italy performs better than both the EU-27 average (**-2.2 p.p.**) and benchmark countries (**-3.3 p.p.**).

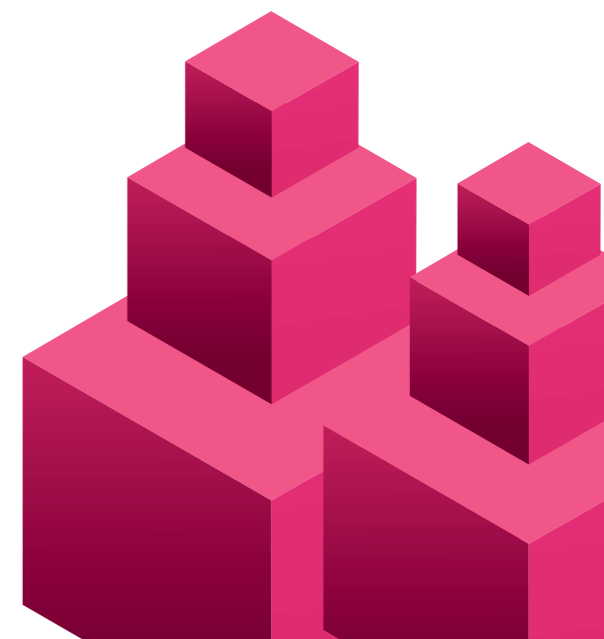


**Figure 3.1.** Firms experiencing a level of "low digital intensity" by firm size<sup>3</sup> in Italy, EU-27 and benchmark countries (%), 2021. Source: The European House – Ambrosetti elaboration of European Commission data, 2022

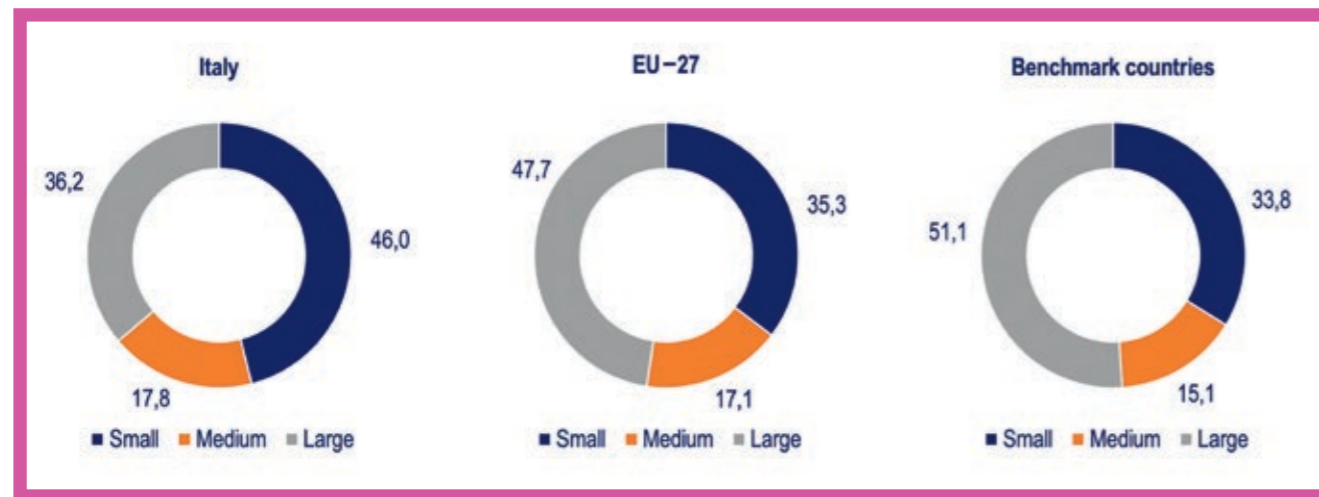
In Italy, the digitization process is slowed down by two interconnected factors. Small companies perform worse than average in the digital transition and represent a particularly significant source of value added at the Country-System level.

At the same time, large enterprises, which perform better than average in the digital transition, are nevertheless few in number and account for a significantly smaller share of national value added compared to EU-27 average.

<sup>3</sup> Company size is calculated based on the number of employees: Small (1-49 employees), Medium (50-249 employees) and Large (>250 employees).







**Figure 3.2.** Value added by firm size in Italy, EU-27 and Benchmark Countries (% of total), 2021.  
Source: The European House – Ambrosetti elaboration of European Commission data, 2022

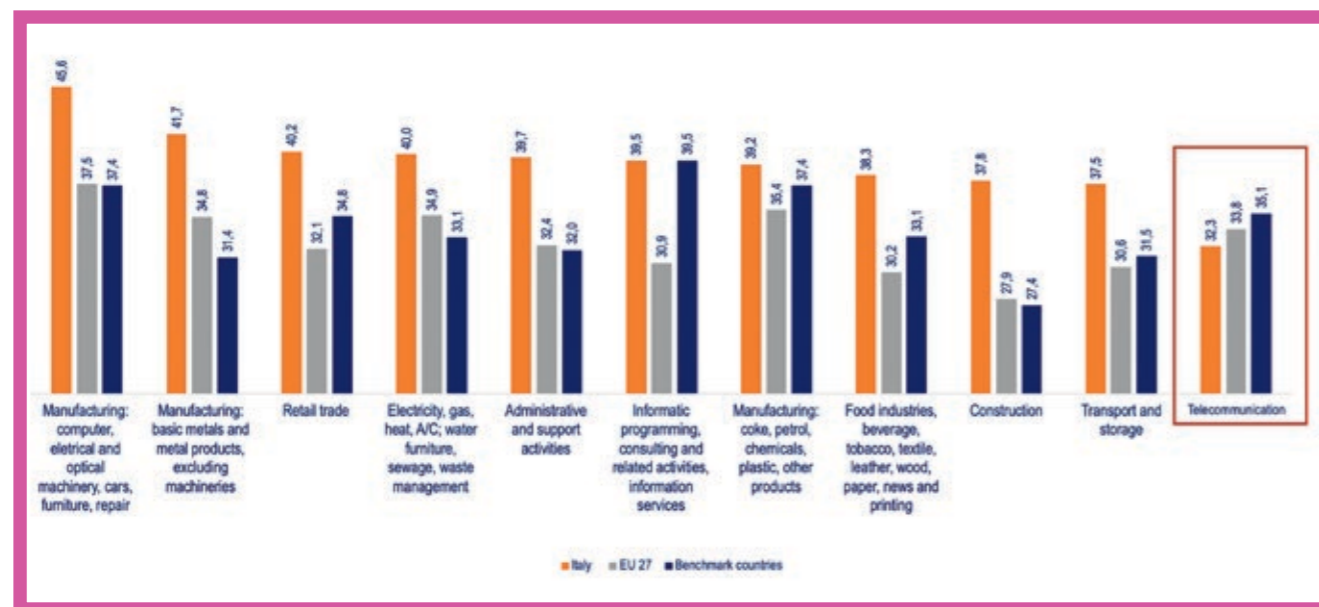
As can be seen in the chart above, net of a portion of medium-sized businesses that remains almost constant in the three clusters (Italy, EU-27 average and benchmark countries), in Italy there is a disproportionate presence of small businesses in the economy (46% of total value added), a share 10.7 p.p. higher than the EU-27 average and 12.2% higher than that of benchmark countries.

The trend for large enterprises is the opposite: in Italy they account for 36.2% of total value added, a share 11.5 p.p. lower than the EU-27

average and 16.9 p.p. lower than that of benchmark countries.

By contrast, there are no particular discrepancies in the degree of digitalization of Italian companies when looking at the **sector of economic activity** to which they belong.

In fact, as can be seen in the chart below, Italy lags significantly behind in digital transition in all Ateco sectors, with the sole exception of the Telco sector, where the country performs slightly better than EU-27 (-1.5 p.p.) and benchmark countries (-2.8 p.p.).



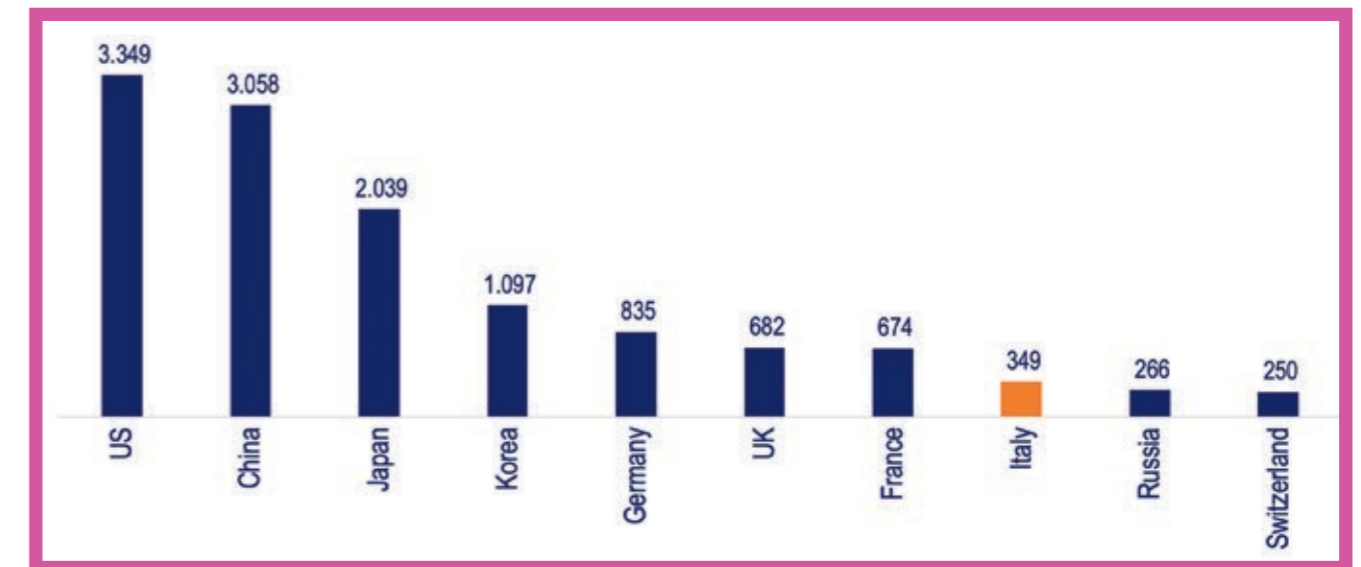
**Figure 3.3.** Firms recording a level of "low digital intensity" by Ateco sector in Italy, EU-27 and benchmark countries (% of total), 2021.  
Source: The European House – Ambrosetti elaboration of European Commission data, 2022

Broadening the perspective of technological innovation beyond digital in the strict sense, it can be seen that, in 2020, in terms of private research, Italy ranks **8<sup>th</sup> in the world** for the number of active patents (349,000) and **3<sup>rd</sup> in the European Union** after Germany and France.

Despite an excellent world ranking, Italy can do more. On one hand, active patents in our country are **52%** of those in France and **42%**

of those in Germany, comparable countries in terms of available resources and research tools.

On the other hand, there is a slowdown in private R&D activity in Italy. In fact, due in part to restrictions on business activity during the pandemic, Italy ranked only **17<sup>th</sup>** in the world for new registrations during 2020, thus risking a lower position globally (compared with Germany **5<sup>th</sup>** and France **13<sup>th</sup>**).



**Figure 3.4.** Top-10 countries in the world by number of active patents (thousands), 2020.  
Source: The European House – Ambrosetti elaboration of WIPO data, 2022

Technological development is hindered by low private investment in R&D, in which Italy is **13<sup>th</sup>** in the European Union for private R&D investment in terms of GDP. Specifically, net of a slightly better position than Spain, Italy registers: **-0.6 p.p.** compared with the EU-27 average, **-0.63 p.p.** compared with France and **-1.18 p.p.** compared with Germany.

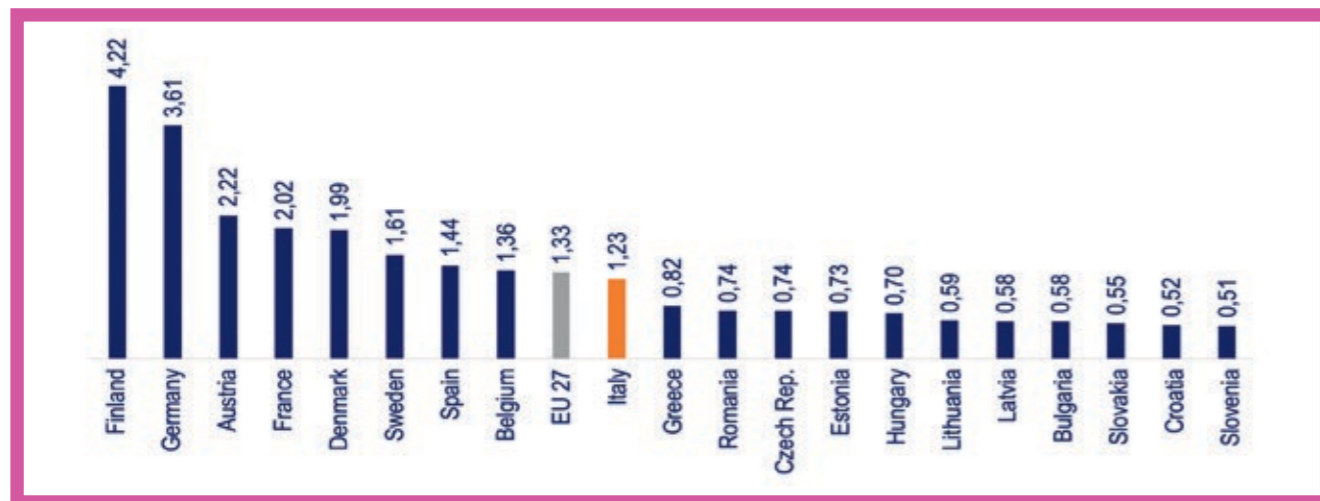
Over the past decade, however, private investment has increased more in Italy (+0.27 p.p.) than in Spain (+0.08 p.p.), France (+0.16 p.p.), Germany (+0.21 p.p.) and the EU-27 average (+0.26 p.p.).

A further critical aspect in the Italian innovation and technology ecosystem is

a fragile digital market, characterized by undersized players compared to major European competitors.

The extensive fragmentation of the private ICT sector does not facilitate the promotion of open innovation, the development of large research projects and the achievement of economies of scope and scale, as evidenced by the **great difficulty in building Italian digital champions**.

Suffice it to say that if Italy were to achieve an average ICT company size equal to that of Germany, the sector would generate **€249.2 billion** in additional business volume, equivalent to 14.0% of Italy's 2021 GDP, compared to the 7.2 percent recorded.

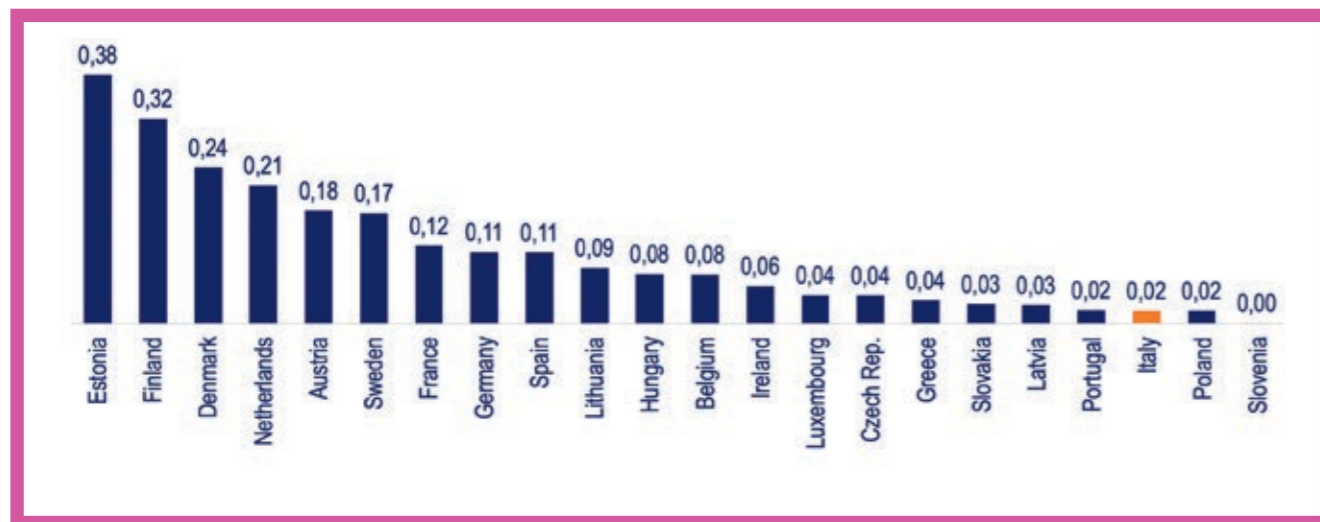


**Figure 3.5.** Average revenues per company in the extended ICT sector by EU country (million euros), 2019.  
Source: *The European House – Ambrosetti elaboration of WIPO data, 2022*

At the same time, Italy has historically been in the **rearguard positions for the role of venture capital** in business development, ranking third-to-last in the European Union in terms of venture capital investment in the ICT sector as a proportion of GDP. In 2021, venture capitalists invested more than **€20 billion** in Europe, almost half of which went to about 2,500 ICT companies. As for Italy, venture

capitalists invested about **€375 million** in the Italian **ICT sector** in 2021, **accounting for about 4%** of the resources invested at the European level.

Even in terms of the number of ICT companies financed, as a result, Italy's share does not reach **4%** (90 ICT companies in Italy compared with 2,500 in Europe).



**Figure 3.6.** Venture capital investments in the ICT sector in relation to GDP (%), 2021.  
Source: *The European House – Ambrosetti elaboration of OECD data, 2022*

In addition to economic and technological resources, in order to adequately take advantage of the opportunities of the digital transition, local areas and particularly

businesses must also be provided with an adequate connectivity infrastructure. **Access to a fast network connection is, in fact, a prerequisite** for the development

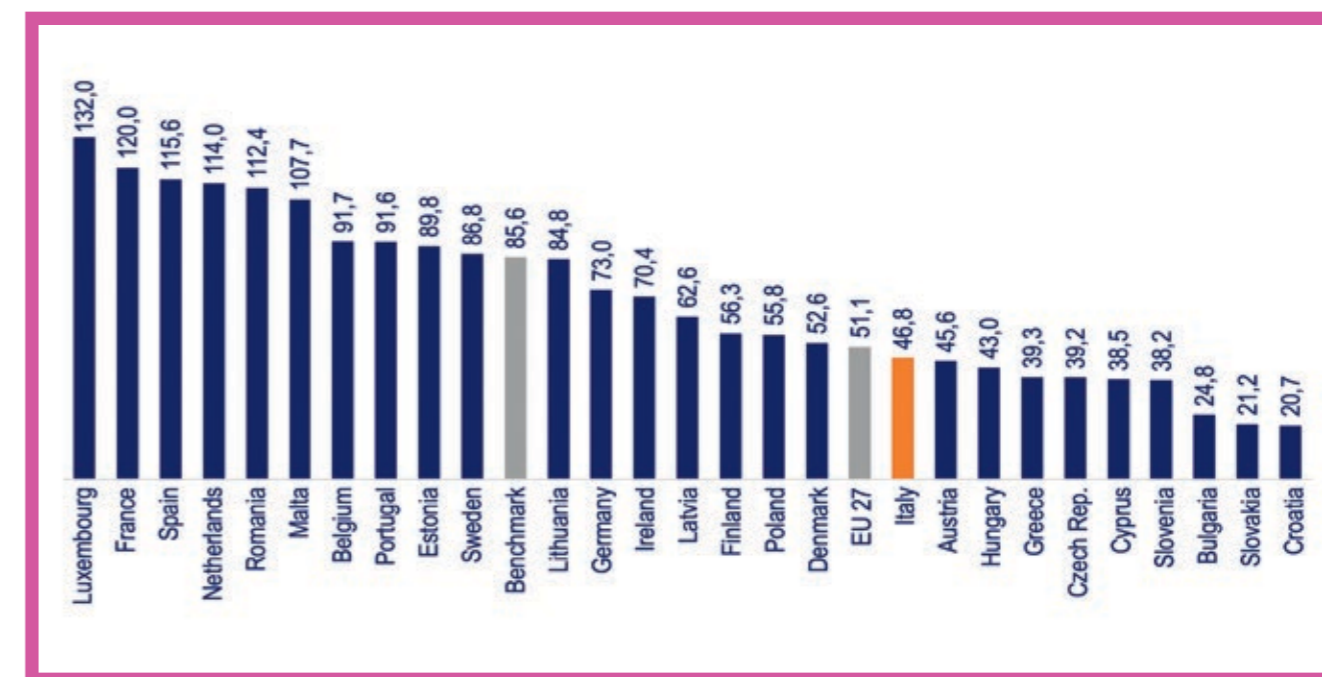
of an effective and interconnected innovation and research ecosystem, both internally and externally with other innovation players.

In Italy, important measures have been implemented for greater internet coverage throughout the country. Between 2017 and 2022, individuals connected to the fixed network in Italy increased by **10.4 p.p.** (compared to **+6.0 p.p.** on average in the EU-27 and **+5.0 p.p.** in benchmark countries). In terms of mobile network connection, connections increased by **19.1 p.p.** over the same five-year period (compared to **+13.2 p.p.** on average in the

EU-27 and **+9.4 p.p.** in benchmark countries).<sup>4</sup>

However, the measures implemented have not been sufficient to bring Italy's performance into line with the rest of Europe.

In fact, in 2022, Italy still ranks **4<sup>th</sup>-to-last** in the European Union for fixed connection internet penetration (with a penetration of **65.7%** against an EU-27 average of **77.8%** and a benchmark country average of **81.4%**) and **3<sup>rd</sup>-to-last** for mobile network penetration (with a penetration of **79.6%**, against a European average of **86.5%** and a benchmark country average of **89.4%**).<sup>5</sup>



**Figure 3.7.** Average Internet connection speed (fixed and mobile) per IP in the European Union (Mbps), 2022.  
Source: *The European House – Ambrosetti elaboration of Cabel data, 2022*

In terms of connection speeds, infrastructure status is similar. Between 2017 and 2022, Italy recorded an increase of **+36.1 Mbps** in download speed, an advance that allowed the country to move, in terms of rank, **from 22<sup>nd</sup> to 14<sup>th</sup>** position in the EU-27. However, this trend was not enough

to bring Italy in line with European standards. In fact, as can be seen in the figure above, in 2022, in Italy the average download speed is **46.8 Mbps**,<sup>6</sup> **4.3 Mbps** lower than the EU-27 average and **38.8 Mbps** lower than the benchmark countries average.

<sup>4</sup> Source: The European House – Ambrosetti elaboration of data from the European Commission.

<sup>5</sup> Ibid.

<sup>6</sup> Average data derived from analysis of 7.54 million tests conducted on fixed (computers and consoles) and mobile (smartphones, tablets) devices.

## 3.2 TECHNOLOGY AND DIGITAL AS LEVERS FOR THE REVITALIZATION AND COMPETITIVENESS OF COMPANIES IN ITALY

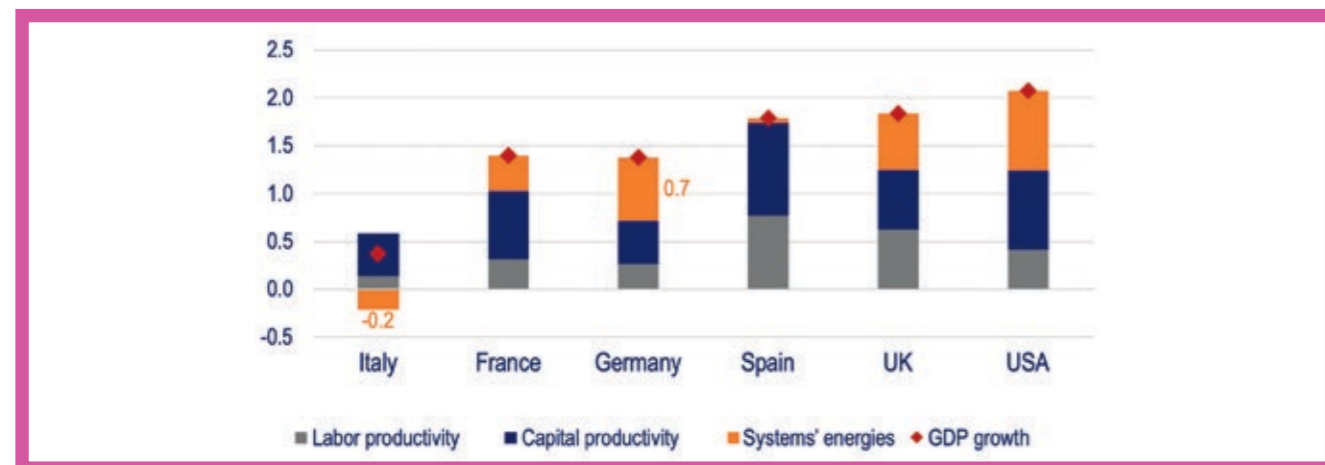
The development of the digital ecosystem for Italian businesses can have a real impact on the productivity and prospects of businesses but, in order to be promoted, it needs targeted initiatives to address some of the country's

challenges, starting with at least four priority issues: adaptation of digital skills and culture, adoption of new operating models, strategies for cybersecurity, and need for data sharing.

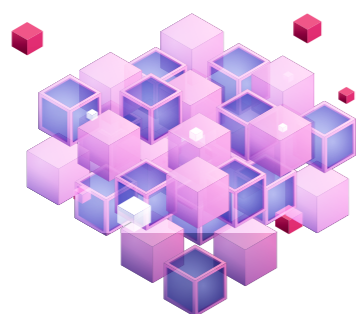
### 3.2.1 Digital as a concrete contribution to enterprise productivity

Italy's gaps in technology and digital adoption are also reflected in stagnant productivity. **Productivity**, in terms of GDP per capita, **in Italy is stagnant** and has not yet realigned to the levels of 2000. In fact, compared to the values recorded in 2000, in 2021 productivity was down **3%**, compared to an increase both among benchmark countries (**+10%** in Spain, **+14%** in France and **+23%** in Germany) and on average in the European Union (**+25%**). From this point of view, digital directly influences

the total productivity of countries through "**system energies**" (so-called multifactor productivity). These energies are understood as the residual component of growth not due to changes in the effectiveness of labor and capital, but attributable to managerial practices, digitization, regulation and positive spillovers in terms of the economic environment (ecosystem in which firms operate). These, in Italy, instead of being a boost for the country, restrain growth and reduce productivity.



**Figure 3.8.** Contribution of different types of productivity to GDP growth by country (percentage points, annual average), 2000-2019. Source: The European House – Ambrosetti elaboration of data from the European Commission and OECD, 2022



At the micro level, moreover, the new tools offer opportunities in terms of increased cross-firm productivity. In fact, digitized companies<sup>7</sup> in Italy are not only **+0.5 p.p.** more productive<sup>8</sup> than

non-digitized companies (**+0.4 p.p.** on average in the European Union), but also more capable of generating employment by **+4 p.p.**<sup>9</sup> (compared with **+7 p.p.** on average in the EU-27).

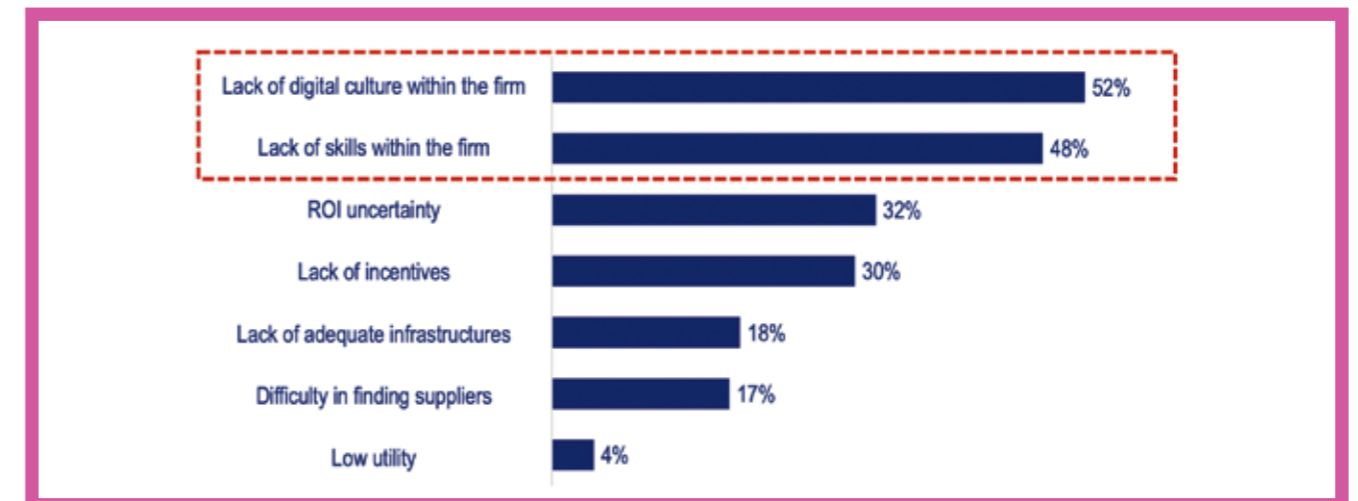
### The adjustment of digital skills and culture

The lack of digital culture and skills is perhaps the main obstacle to the digitization of businesses.

According to the findings of a survey by The European House – Ambrosetti and Microsoft for the "Next Generation DigItaly" study, the lack of digital culture in a company is the main obstacle

to seizing the opportunities offered by the digital transition (52% of companies).

In addition, companies that decide to pursue strategies to digitize their business and make investments in technology would still face a lack of internal skills needed to manage the change (in 48% of companies).



**Figure 3.9.** Results of The European House – Ambrosetti's survey for the "Next Generation DigItaly" study to the question, "In what areas have you experienced difficulties in incorporating new digital technologies?" (multiple choice). Source: The European House – Ambrosetti elaboration of proprietary data, 2022

The Italian statistical picture confirms the survey results: there is a significant lack of basic digital skills in Italy<sup>10</sup>. According to Unioncamere and ISTAT, there are **2.1 million** workers who need to

develop basic digital skills between 2022 and 2026, including **231,600** artisans and blue-collar workers, **579,800** in white-collar occupations and **1,299,900** in high-skilled occupations.<sup>11</sup>

<sup>7</sup> Enterprises that have adopted modern Internet platforms.

<sup>8</sup> Labor productivity is calculated as the ratio of turnover to the number of employees. Median percentage values for the year 2019. Source: The European House – Ambrosetti elaboration of EIB data, 2022.

<sup>9</sup> Changes in percentage points to total firms that increased employment, 2019 vs. 2017. Source: The European House – Ambrosetti elaboration of EIB data, 2022.

<sup>10</sup> Basic digital skills are defined as the ability to use Internet technologies and to manage and produce visual and multimedia communication tools (e.g., MS Office).

<sup>11</sup> The data refer to the entire labor force (not just new entrants).

Italy, however, lacks not only basic but also specialized and advanced digital skills.

In fact, as can be seen in the chart below, Italy ranks last in the European Union in ICT course enrollments as a ratio of population,

**3.1 times** lower than Germany, **2.6 times** lower than Spain and **50.3% lower** than France. In absolute terms, given the starting point of **40,000** enrolled in ICT degree programs in Italy, our country lacks **130,000 enrolled** to reach Germany's levels.



**Figure 3.10.** EU countries by number of enrollees in ICT course of study in relation to population (per thousand people), 2021. Source: *The European House – Ambrosetti elaboration of Eurostat data, 2022*

## The adoption of new operating models

Digital ecosystems enable new operating models. The number of networked devices worldwide has increased by **14.1 billion** over the past decade, from **9.7 billion** in 2011 to **23.8 billion** in 2021.

This includes a **13.8-fold** growth in Internet of Things (IoT) devices over the period,<sup>12</sup> which is much faster than the growth in non- IoT devices,<sup>13</sup> amounting to **+14.9%** over the decade. 5G, particularly in the manufacturing sector, has revolutionized the industry's

capabilities and potential. Through real-time data collection and processing, along with increased computational capacity, 5G has enabled a wide range of new applications: primarily, digital pattern analysis and prediction (including through the use of "digital twin"<sup>14</sup>), but also process automation through the use of industrial robotic units (growing at an annual rate of **11.2%** over the past decade and reaching **3.4 million** units worldwide by 2021) and process efficiency.

<sup>12</sup> IoT devices include all industrial and B2B devices.

<sup>13</sup> Non-IOT devices include all devices for personal use, such as smartphones, tablets and PCs.

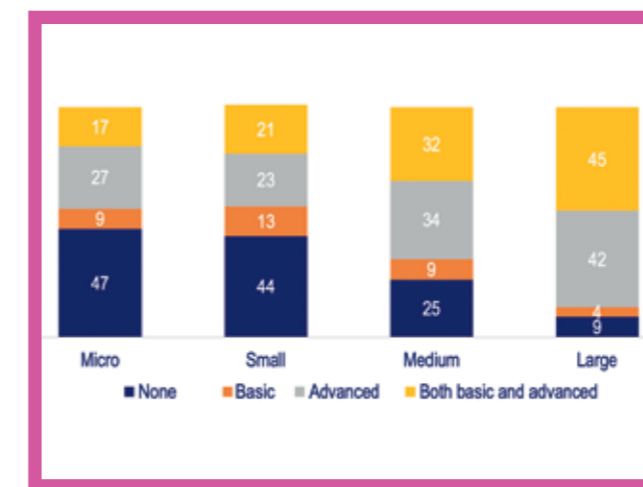
<sup>14</sup> The digital twin consists of a virtual, continuously updated and synchronized real-time representation of an object or system existing in the physical world. In the manufacturing sector, the digital twin already has an established presence internationally: between 2017 and 2022, the percentage of companies in the European Union using these tools increased from 25% to 48% (compared to 7% in Italy).

Digital can also be a strategic lever for increasing the productivity of small- and medium-sized enterprises.

In fact, this indicator of economic performance is particularly correlated with firm size in Italy. The productivity differential between large<sup>15</sup> and micro<sup>16</sup> firms in Italy is **€42,100** per employee,<sup>17</sup> compared with an average differential of **€36,200** in the EU-27 and **€30,900** in benchmark countries.

As seen above, a small size penalizes companies in terms of degree of digitization, due to their lower ability to sustain the investment and fixed costs in technology and ICT skills needed to cope with digital transformation.

In fact, in 2021, about half of **small** (or micro) **companies did not record any level of digitization**, a share that drops to **9%** among large companies.



**Figure 3.11.** Level of digitization of companies by size (% values), 2021. Source: *The European House – Ambrosetti elaboration of Eurostat data, 2022*

<sup>15</sup> With a number of employees >250.

<sup>16</sup> With a number of employees ranging from 0-9.

<sup>17</sup> Data refer to the year 2019. Source: *The European House – Ambrosetti elaboration of Eurostat data, 2022.*

<sup>18</sup> Set of ICT services accessible on-demand and in self-service mode via Internet technologies, based on shared resources, characterized by flexibility of use and timely measurability of performance levels so that they can be paid for based on consumption.

In this context, technologies such as **cloud computing**<sup>18</sup> can be a strategic lever for boosting the productivity of SMEs, as these companies can benefit from high computing capacity, security, on-demand services and cutting-edge expertise, without large investments in infrastructure.



### Innovation statistics: status and prospects of the ICT sector in Italy

In 2022, the hardware and software sector represents a turnover of **€75 billion** in Italy (including **€13.6 billion** for the digital services share), and in recent years the sector has grown at an average annual rate of between **4** and **5%**.

Today, digital and technologies represent a mandatory path for company competitiveness, no longer solely in terms of increased efficiency and lower operating costs, but as a lever for business model development. In fact, in the coming years, the industry is expected to accelerate, reaching a CAGR (Compound Annual Growth Rate) of between **7-10%**, although with significant differences in terms of the various technologies. Traditional systems, such as **system integration** services, will grow the least, at a CAGR of less than **2%**. Cutting-edge technology products and services, on the other hand, will experience much faster growth, with an average CAGR between **10-15%**. Prominent among these technologies are:

- **Cloud computing** for access to digital services and on-demand computing capabilities;
- **Cybersecurity services**, for which awareness has increased among entrepreneurs and public institutions;
- **Marketing technologies**, which include data analytics, artificial intelligence and customer experience services for supporting enterprises in a digital transition in their relationship with customers, demand forecasting and stock management in production and warehousing;
- **High-end enterprise services**, including the new paradigms of virtual reality, block chain, and digital twin, this last useful for simulating product layouts and production processes in advance, expected to grow at a CAGR of **70-75%**.

Source: elaboration The European House – Ambrosetti of various sources, 2022

### The development of cybersecurity strategies

The spread of digitization goes hand-in-hand with an increase in Company-System security risks. In Italy, serious attacks on critical infrastructure are expected to have increased by

**36% between** 2020 and 2021, compared with an already worrying average annual growth rate over the past decade (**+14.4%** average annual increase between 2011 and 2021).



Figure 3.12. Number of serious public domain attacks in Italy (number) and average annual growth rate (percent), 2011-2021. Source: The European House – Ambrosetti elaboration of Clusit data, 2022

Cyber attacks are not only more frequent, but also more severe. Compared with 2020, the specific weight of higher severity attacks increased in 2021 and the specific weight of lower severity attacks decreased.

Specifically, in the past year, critical attacks have increased by **18 p.p.** and high severity attacks by **11 p.p.**, while medium severity

attacks have decreased by **13 p.p.** and low severity attacks by **16 p.p.** The economic consequences for businesses are clear: in 2021, cyber attacks, including those carried out through malware or phishing to steal credentials, or hacking of mobile devices, or even direct attacks on the infrastructures of financial institutions, caused Italian businesses a cumulative damage of **€4.1 billion**.

### The need for data sharing

Further impeding the country's digitization is the low prevalence of a culture for data sharing among the country's businesses,

limiting the possibilities for knowledge and technology creation among digital ecosystems, public administration and supply chains.



Figure 3.13. Responses to the question "Does your business model/operating model currently include continuous and automatic exchange of data with stakeholders?" (percentage values of total), 2021. Source: The European House – Ambrosetti elaboration for the study "The Data Economy in Italy and the Role of the Cloud for the Digital Transition," 2022

According to the European Commission, data sharing represents an opportunity for Italy to

seize. In fact, Italy ranks **7<sup>th</sup>** in the European Union for high potential impact of open data.<sup>19</sup>

<sup>19</sup>This composite indicator assesses the extent to which countries have an open data policy (including the transposition of the revised PSI Directive), the estimated political, social and economic impact of open data, and the characteristics (functionality, availability and use of data) of the national data portal. Source: The European House – Ambrosetti elaboration of European Commission data, 2022.

### Data sharing and digital evangelism: the case of Glovo

The **collection and use of data** are at the heart of the business model and digital approach of new food (and non-food) home delivery platforms, like Glovo. Thanks to the data collected, digital platforms can optimize their stocks and plan delivery flows with a **high degree of detail and accuracy** that is impossible to replicate in traditional offline business models. In fact, the information obtained makes possible the analysis of numerous variables related to the user experience, which is useful not only in the short-term to establish a **direct channel** for the sale of products, but also in the medium- to long-term to develop additional **new business models**, such as for the enhancement and promotion of local products or for the integration of catering services.

The business carried out by digital platforms—if it meets the requirements of a minimum user base and capacity and reliability of communications and performance—typically produces **benefits for all parties involved**, precisely because of the sharing of information between the parties. In the case of digital platforms for the distribution of food products, among other benefits, **consumers** can receive products and discounts with delivery to their homes, **restaurant owners** can sell more products and avoid restaurant over-crowding with lines of customers, and the **platform** can reserve a percentage of profit on the transactions made to compensate the service it provides.

In Italy, on the one hand, the demand for the consumption of these services by individuals is already largely developed; on the other hand, restaurant usage of these digital services is affected by some cultural restraints.

The pandemic, however, **has provided a strong acceleration** in the demand for these services, from both consumers and restaurant owners, who now make use of these tools because of the benefits and better performance found during and after the pandemic. The task of these platforms, in Italy, is also to continue to spread the culture for digital to small businesses on the ground, performing an economic and social function of **“digital evangelism”**.

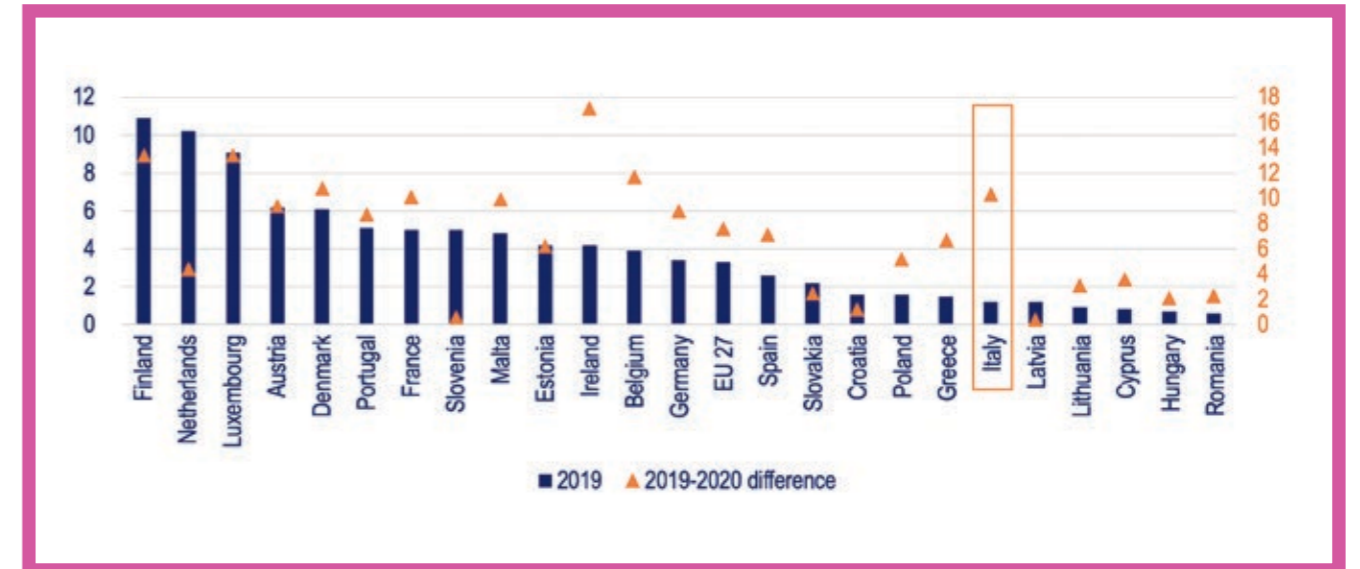
Source: *The European House – Ambrosetti elaboration of various sources, 2022.*

### 3.2.2 The role of smart working in the digital transition

The pandemic emergency has provided a strong stimulus to the adoption of smart working, especially in Italy.

In 2019, only **1.2%** of employees in Italy worked remotely (compared to **3.3%** in the European Union and **3.7%** in benchmark countries).

Due to the high incidence of the pandemic, Italy was suddenly forced to shift to smart working, registering an increase of **10.3 percentage points**, higher than in the European Union (**+7.6 p.p.**) and benchmark countries (**+8.7 p.p.**).

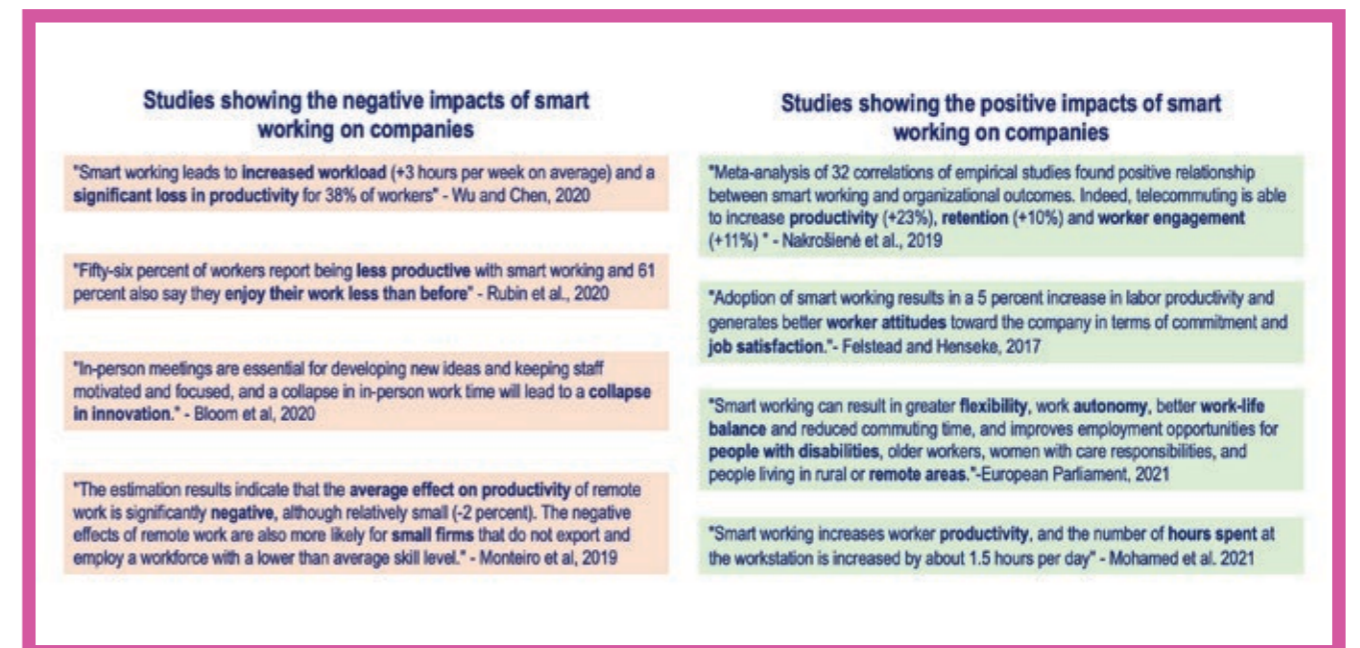


**Figure 3.14.** Employees in the European Union who routinely worked remotely pre-pandemic (left axis, %), 2019 and increase during the pandemic (right axis, p.p.), 2019-2020.

Source: *The European House – Ambrosetti elaboration of GroupM Business Intelligence & Insight data, 2022*

The forced adoption of smart working, previously uncommon in Italy, has confronted workers and companies with a **totally new way of working** (and consequently also of living).

Productivity and flexibility, workloads and stress, retention and attractiveness are just some of the areas in which the **impact of smart working** can be measured and on which much literature has been produced in recent months.



**Figure 3.15.** Selection of citations from scholarly articles supporting the negative (left column) and positive (right column) impacts of smart working on firm output variables and the employee-firm relationship.

Source: *The European House – Ambrosetti elaboration of Google Scholar data and various sources, 2022*

Focusing on the impacts of smart-working on productivity, research **provides ambiguous results**, generating a less-clear overall picture than is often assumed (Eurofound, 2020).

According to the OECD (2020), given the **multiplicity, complexity and interaction among factors related to remote work**, there is currently no consensus in the literature on the impact of remote work on job performance.

**Determinants include** a wide range of work-related aspects, including:

- **conditions of the remote work environment**, such as ICT/digital equipment, home ergonomics, **speed and quality of**

**broadband connectivity, training** for both telecommuters and their managers **in work-related issues, communication and management of remote virtual teams;**

- **work organization and management model**, such as the degree of employee autonomy, flexibility, management expectations based on performance or attendance, and management's ability to adapt to motivate, support and manage the staff;
- the **nature of work and employment**, such as the degree of interdependence of the worker's tasks with other tasks, the extent to which teleworkers' tasks can be performed independently, and the space for creativity.

#### Smart Working: the Nestlé FAB model

Nestlé's FAB (**Flexible, Adaptive and Balanced**) model, now being tested, appears to be a particularly effective solution that can be applied by companies from different sectoral and territorial backgrounds.

**The first pillar** on which the model is based is that of **flexibility**. The FAB model does not provide for general obligations of physical presence of employees, with the sole exception of new entrants, for whom 5-days-out-of-5 presence in the office is mandatory, a rule which is functional for rapid growth and professional enrichment of new entrants. Instead, the task of defining the methods and times of work in presence is entrusted to the team leaders of the work groups, who are closer to the specific needs of individual employees and more aware of the processes necessary to achieve the objectives.

**The second pillar** of the FAB model is **adaptability**: in the event of an emergency or need, the company reserves the right to establish a common policy for all employees, either in the direction of reducing office attendance or increasing it.

**The third and final pillar** of the FAB model is that of **balance**: at the general level, the company has communicated to its employees a non-binding expectation of a 50-50 balance between in-person and remote work, and trusts that work groups will naturally converge on these levels in the medium- or long-term.

*Source The European House – Ambrosetti elaboration of various sources, 2022.*





## CHAPTER 4

# Innovation ecosystems, infrastructure and prospects for the Country-System

### 4.1 THE RESOURCES AND INFRASTRUCTURE NEEDED FOR THE DEVELOPMENT OF DIGITAL ECOSYSTEMS IN ITALY

In light of its economic, social and strategic importance, in 2010 the European Commission defined a set of connectivity targets in the “**European Digital Agenda for 2020**”, which have yet to be fully met in Italy:

- Access to basic broadband connection (**≤30 Mbps**) to all European households by 2013;
- Access to faster-than-basic broadband connections to all European households by 2020;
- Access to ultra-broadband internet connections (**>100 Mbps**) for 50% of European households by 2020.

Then, in 2016, the European Commission updated its internet availability targets and released a new set of long-term goals for 2025, all in the direction of a faster and highly reliable internet infrastructure, the “**Gigabit society agenda**”:

- Connection **>1 Gbps (>1,000 Mbps)** for

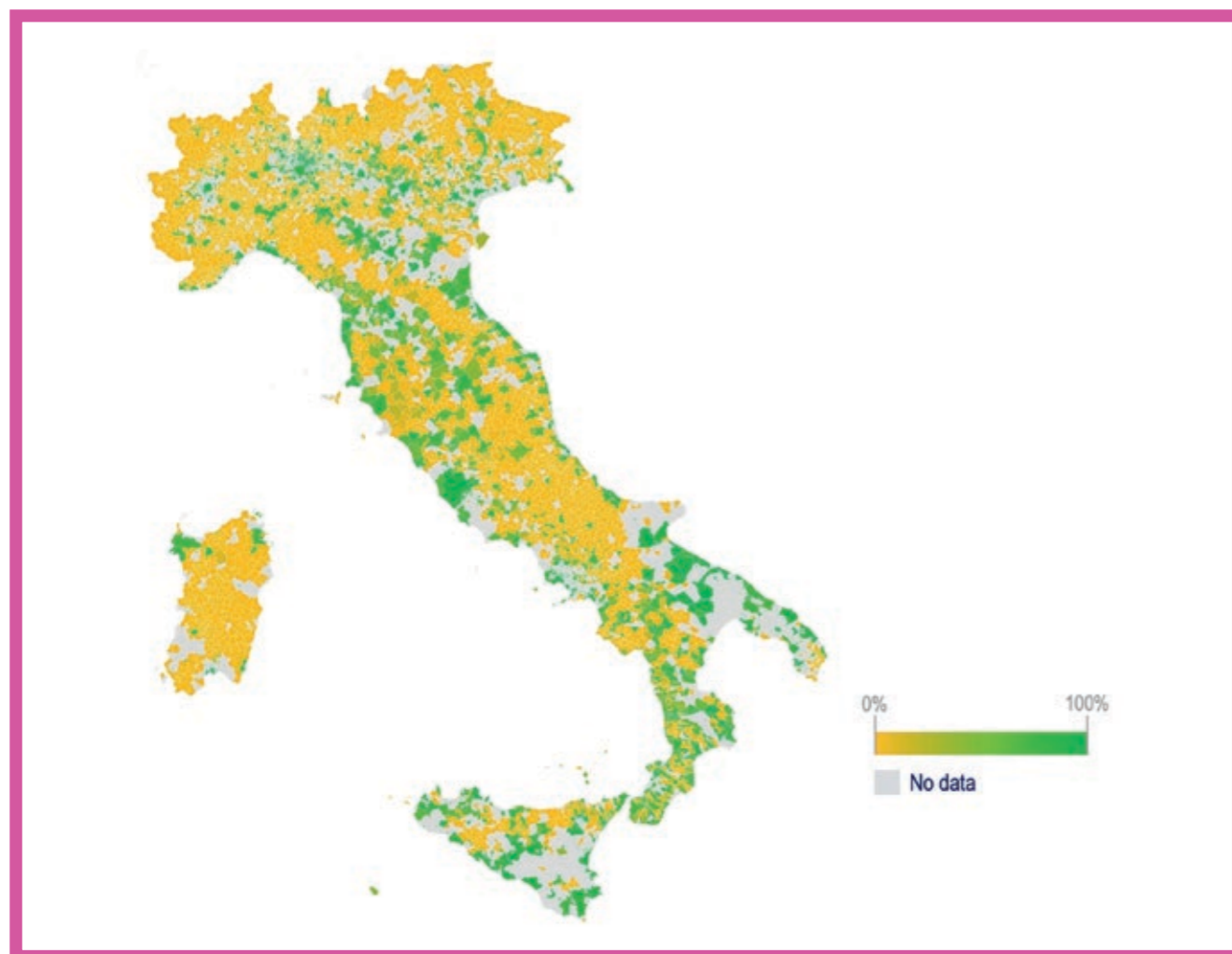
all major socio-economic entities such as schools, transportation nodes and major public service providers, as well as digitally-intensive businesses;

- Uninterrupted **5G** coverage in all urban areas and all major ground transportation;
- Access to ultrawideband for **50%** of European households in all urban areas, as well as on major land transport routes;
- Internet connectivity enabling download speeds of at least **100 Mbps**, upgradable to **1 Gbps**, to all European households in both rural and urban areas.

In Italy, connectivity suffers major **discrepancies between different areas of the country** and a general **lack of the necessary infrastructure for fast internet**, two factors that act as a brake on the development of businesses and the competitiveness of the Country-System.







**Figure 4.1.** Households connected to ultrabroadband in Italian municipalities (%), 2020.  
Source: The European House – Ambrosetti elaboration of AGCOM data, 2022.

In 2020, **253** municipalities in Italy had no internet connection at all, either in the form of fixed network or mobile network, and **59** municipalities were connected to the Internet with a speed between 0 and 2 Mbps.

The most common connection speed at the municipal level is between 2 and 30 Mbps (in **51.7%** of Italian municipalities), while only **44.3%** of Italian municipalities have access to ultrawideband.<sup>1</sup>

Internet speed is, in fact, a key element in both the use of digital tools by citizens

and businesses. To open a website,<sup>2</sup> a device connected to the Internet at a speed between 0 and 2 Mbps takes an average of **16.1 seconds**, while it takes **1.1 seconds** if connected at a speed between 2 and 30 Mbps and between **0.2 and 0.01 seconds** if connected to ultra-broadband.

At the root of Italy's delay in the country's digitization process is first and foremost a problem of **lack of resources** and the absence of the right **market conditions** for grounding the investments needed to develop the digital infrastructure, starting with the telecommunications sector.

<sup>1</sup> Defined as the internet connection capable of enabling a download speed >30 Mbps. Source: The European House – Ambrosetti elaboration of AGCOM data.

<sup>2</sup> The average in-memory size of a website in 2022 is 2.014 MB. Source: The European House – Ambrosetti elaboration of SEOptimer data.



**Figure 4.2.** Annual revenues of the telecommunications sector in Italy (billion euros), 2010-2021.  
Source: The European House – Ambrosetti elaboration of Eurostat data, 2022.

In fact, between 2010 and 2021, the telecommunications sector in Italy recorded a **33.6% decline** in annual consolidated revenues (-€16 billion in absolute value), compared with a **6.1%** growth on average in benchmark countries. Revenues also declined in 2020, a pandemic year where digital revealed its crucial importance for the activities of individuals and businesses.

As a result, over the period 2010-2021, the telecommunications sector cumulatively lost revenues of **€114.9 billion**<sup>3</sup> compared to the constant revenue scenario.

In the same period, as seen above, national and European policies were already going towards the opposite direction, imposing targets for greater connectivity at the territorial level, in light of the growing relevance of digital for the competitiveness of the Country-System, and thus, the need to ground substantial investments in network infrastructure.

The gradual decline in revenues has not made it easier in Italy to ground the investments needed for network infrastructure

development. In fact, between 2010 and 2019, **telecommunications sector investment** fell from representing **92.3%** of that of the benchmark countries to **53.3%** (over the period, **-39.0 p.p.**).

If Italy had invested at the same level as the average of the benchmark countries, an **additional €18.7 billion** would have been allocated over the decade to build network infrastructure and connect Italian municipalities.<sup>4</sup>

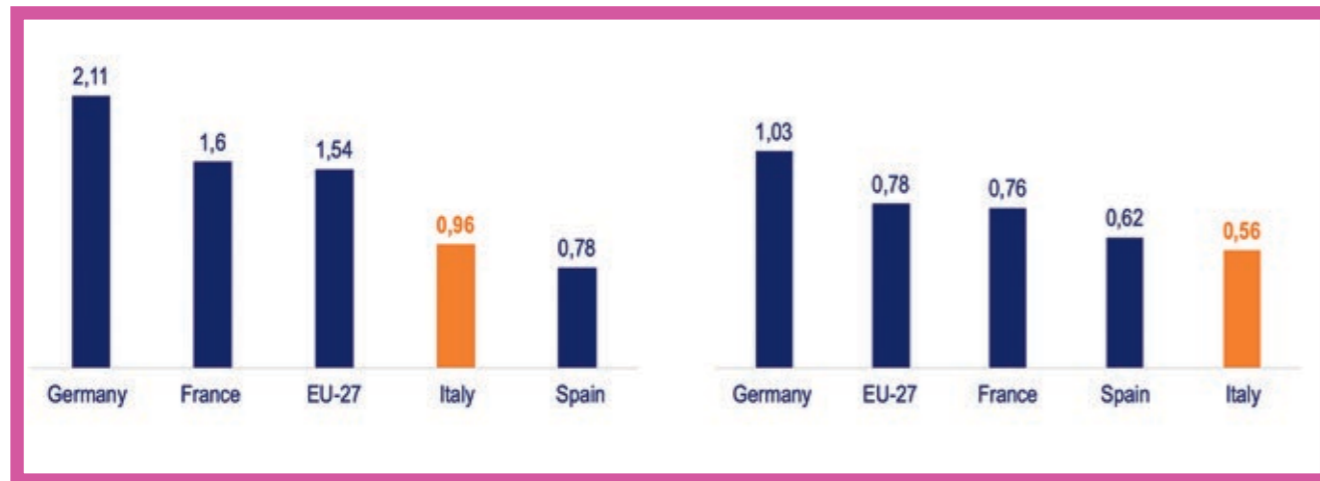
Both public and private R&D investment in Italy registers levels far below the average in European Union and in the benchmark countries.

In fact, in relation to GDP, **private investment** in R&D is **0.58 p.p.** lower than the EU-27 average, **0.54 p.p.** lower than the average of the benchmark countries and **less than half** the investment of Germany.

**Public investment in R&D** in Italy is also insufficient, being **0.22 p.p.** lower than the EU-27 average, **0.24 p.p.** lower than the benchmark countries average and about **half of Germany's**.

<sup>3</sup> The decline in industry revenues is primarily due to the steady reduction in consumer telephone rates (-18.1% in the last five years, a decline three times higher than the EU-27 average) and the fragmentation of the Italian telecommunications market compared to other international benchmarks (in Italy the top three operators have a 74% market share, 7 p.p. lower than the average of the benchmark countries).

<sup>4</sup> Source: The European House – Ambrosetti elaboration of Eurostat data.



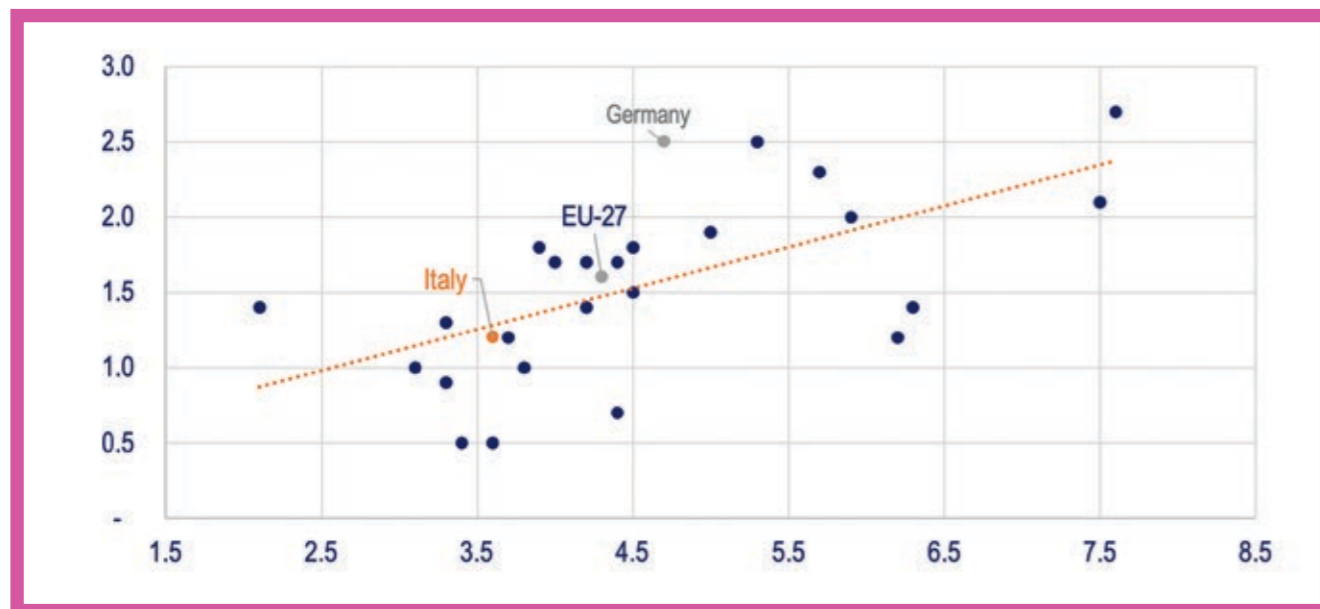
**Figure 4.3.** Private (left graph) and public (right graph) R&D spending in relation to GDP (%), 2020.  
Source: *The European House – Ambrosetti elaboration of Eurostat data, 2022.*

Therefore, in 2020, **€12.7 billion less** were invested in **R&D** in Italy compared to benchmark countries (of which **€8.7 billion** would have been invested by the private sector and **€4.0 billion** by the public sector), with significant repercussions in terms of missed opportunities for development of the Country-System in the medium- to long-term.

Italy also lacks the human resources for technology management and development,

which sees the country in structural deficit. The deficit in graduates in scientific-mathematical degrees inhibits the accumulation and development of the cultural and cognitive capital necessary to manage and reap the benefits of the digital transition of the Country-System.

As can be seen in the graph below, education in STEM degrees and ICT-skilled personnel are significantly correlated variables.



**Figure 4.4.** Correlation between number of PhDs in STEM subjects per 1,000 population (vertical axis, %) and ICT personnel in the total workforce (horizontal axis, %) in EU-27, 2021.  
Source: *The European House – Ambrosetti elaboration of Eurostat data, 2022.*

In fact, in 2021, Italy is **20<sup>th</sup> in the EU-27 for the number of PhDs in STEM subjects** and registers a gap of **-14,900 PhDs** compared to benchmark countries. The limited specialized human resources do not cover the needs of companies: Italy is **20<sup>th</sup> in the EU-27 also in the number of ICT specialists out of the total**, registering a gap of **-157,800 specialists** compared to benchmark countries.

Despite what has been just presented, in Italy it is possible to map **best practices** of technological and digital ecosystems, such as the **life sciences sector**. Life sciences, a sector composed of the pharmaceutical industry, biotechnology and medical device manufacturing, represents more than **5,600 companies**, supports nearly **200,000 employees** in the country and generated **€50.6 billion** in production output in 2021.

The life sciences sector invested **€4.2 billion** in R&D in the past year, mainly in biotechnology (**€1.8 billion**) and pharmaceutical research (**€1.7 billion**). The presence of this ecosystem of excellence in the life sciences sector generates positive impacts for the development of Italian SMEs.

In 2021, Italy was, in fact, the **no.1 country in the EU-27 for value of production of pharmaceutical SMEs**, with a value of production of **€7.1 billion (40.8 percent)** of the total EU-27 production of SMEs in the pharmaceutical sector, a value **1.9 times** higher than the production of German pharmaceutical SMEs, **3.1 times** that of Spanish SMEs and **4.2 times** that of French SMEs. In the

field of biotechnology, between 2011 and 2021, the number of active companies increased by **38.4%**, and there are now **220 startups** in the sector, which on one hand bring innovations relevant to the development of the sector, and on the other can take advantage of the technological and digital infrastructure and laboratories of the most-established companies in the market.



## 4.2 DIGITAL AS A LEVER FOR THE REVITALIZATION AND COMPETITIVENESS OF THE COUNTRY-SYSTEM

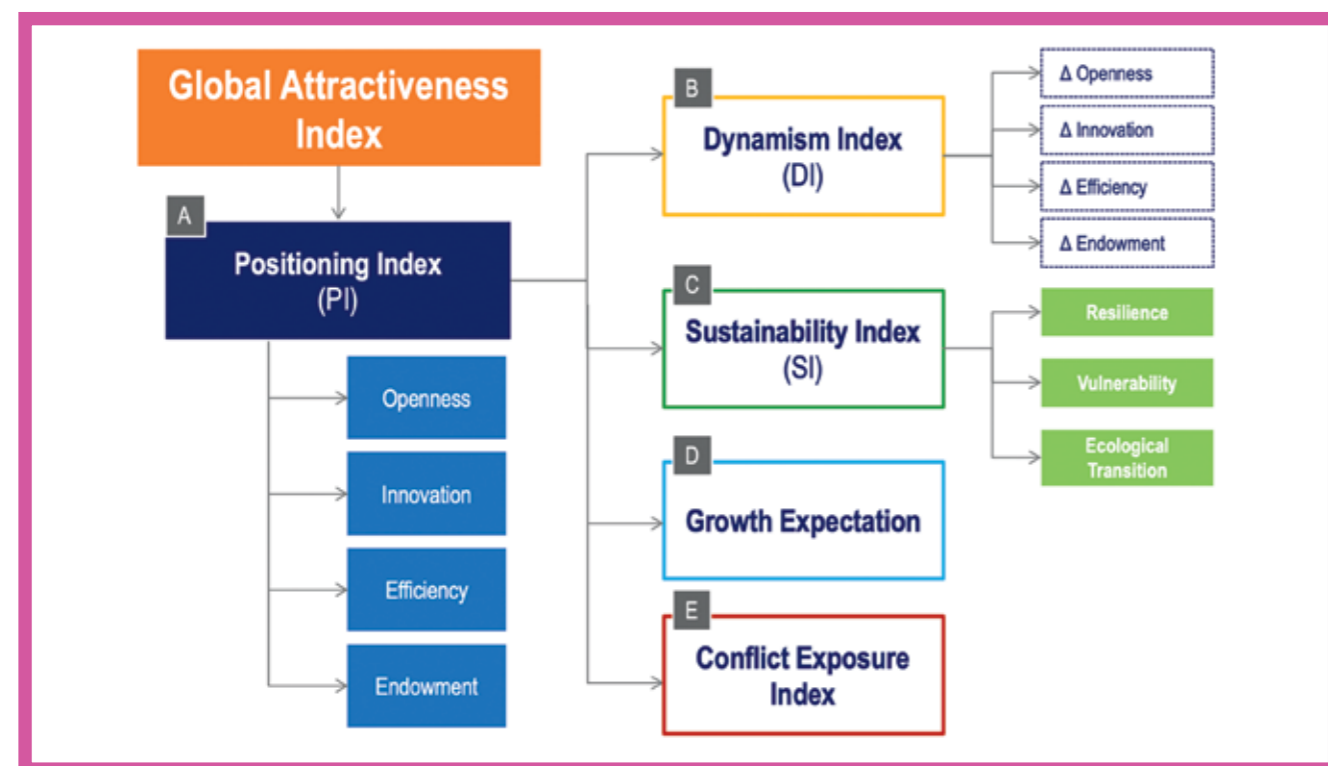
### 4.2.1 The impacts of technology and digital on Italy's attractiveness

The European House – Ambrosetti annually assesses and measures the attractiveness of countries with the Global Attractiveness Index (GAI).

The goal of the Global Attractiveness Index (GAI) is to make available to Italian and international decision makers an innovative Country Index that can offer a **representative profile of country attractiveness** and, consequently, provide reliable information to support systemic choices on growth and optimization of the pro-business environment. The index, which is validated annually by the

Joint Research Center (JRC) and became part of the European Commission's Composite Indicators & Scoreboard in 2022, provides statistical information on Italy and 147 other countries around the world, processing about 1 million data points each year, for a comprehensive view of the dynamics of the attractiveness (not only the economic ones) of countries on a global scale.

In the 2022 edition, Italy ranks **19<sup>th</sup>** in the world for attractiveness and only **8<sup>th</sup>** in the EU-27, offering **medium attractiveness**, due to its score below **60 points**.



**Figure 4.5.** Structure of the Global Attractiveness Index, 2022 edition.  
Source: The European House – Ambrosetti elaboration of international databases, 2022.

	GAI rank 2022	GAI score 2022
Germany	1	100,0
USA	2	99,9
Hong Kong	3	87,6
UK	4	85,2
Japan	5	85,1
Singapore	6	85,0
China	7	83,1
Korea	8	79,2
Australia	9	75,2
Canada	10	73,8
France	11	70,0
UAE	12	69,0
Switzerland	13	68,3
Ireland	14	64,0
Netherlands	15	63,2
Belgium	16	63,0
Sweden	17	59,0
Denmark	18	58,6
<b>Italy</b>	<b>19</b>	<b>56,1</b>
Austria	20	55,0

**Figure 4.6.** Top 20 countries in the Global Attractiveness Index ranking, 2022 edition.  
Source: The European House – Ambrosetti elaboration of international databases, 2022.

To measure the impact of technology and digital on the country's competitiveness and development prospects, we simulated **how digital ecosystems could improve Italy's international attractiveness**.

An improvement in performance of digital ecosystems would mean an extremely significant leap forward for country's attractiveness, capable of generating a better pro-business environment and attracting more

Foreign Direct Investment. Specifically, the three KPIs of the GAI 2022 Positioning Index involving digital ecosystems are:

- **Exports of High-Tech goods** (% of total world exports of High-Tech goods),
- **ICT Development Index** (score),
- **Internet users** (% of population).

Our simulation encompasses two scenarios:

- **Scenario A:** Italy reaching the **average of benchmark countries**. In this scenario, Italy would gain **4.9 attractiveness** score point and would move up **2 positions** in the World ranking, from 19<sup>th</sup> to 17<sup>th</sup>; and up **2 positions** in the EU-27, from 8<sup>th</sup> to 6<sup>th</sup> (ahead of Sweden);
- **Scenario B:** Italy reaching the performance of **best performer countries**.<sup>5</sup> In this scenario, Italy would gain **10.2 attractiveness** score point and would rise **5 positions** in the World ranking, from 19<sup>th</sup> to 14<sup>th</sup>, and **3 positions** in the EU-27, from 8<sup>th</sup> to 5<sup>th</sup> (ahead of Ireland and the Netherlands).

Growth in Italian attractiveness would also have significant impact on Foreign Direct Investment inflows into the country, among other aspects.

An **improvement in the three digital-related KPIs** in the two scenarios, would mean **additional FDI inflows** for Italy in 2022 equal to:

- **Scenario A:** +3.9 billion Euros;
- **Scenario B:** +9.9 billion Euros.<sup>6</sup>

<sup>5</sup> In the EU-27 in 2022: for "Export of High-Tech goods" the best performer country is Germany, and for the "ICT Development Index" and "Internet users" KPIs it is Denmark. Source: The European House – Ambrosetti elaboration of international databases, 2022.

<sup>6</sup> As a benchmark, in 2021 the flow of Foreign Direct Investments in Italy amounted to €8.7 billion. Source: The European House – Ambrosetti elaboration of OECD data, 2022.

## 4.2.2 Technology and digital as tools to combat tax evasion

Digital can also be an important lever to mitigate the phenomenon of tax evasion in the country, a factor that slows down the country's development, inefficiently allocates resources between businesses and productive sectors and inequitably redistributes income among households.

In 2019, in fact, Italy was **no.1 in the EU-27 by VAT gap**, with a value of **€30.1 billion**. Italy has a VAT revenue shortfall equal to **70%** of the sum of Germany, France and Spain, and alone, is worth **22.4%** of the VAT gap of the entire EU-27, which cumulatively amounts to **€134 billion**.<sup>7</sup>

This consideration can be framed in a context

where, in 2019, according to ISTAT data, the unobserved economy in our country was worth €203 billion, or 11.3% of GDP, with the component related to the **shadow economy** amounting to **€183 billion** (with the remainder attributable to illegal activities).

Facilitating tax evasion in Italy is the widespread use of cash, which, as can be seen in the graph below, ranks Italy as the **29<sup>th</sup>** worst economy in the world for cash in circulation as a ratio of GDP,<sup>8</sup> with a value of **15.4%**.

In addition, compared to the last survey, in this KPI Italy's World ranking worsened by **4** positions.



**Figure 4.7** The top 30 global economies by Cash Intensity (cash in circulation over GDP, percentage values), 2022.  
Source: The European House – Ambrosetti elaboration of National Central Banks, CIA World Factbook and World Bank data, 2022.

<sup>7</sup> Source: The European House – Ambrosetti elaboration of European Commission data, 2022.

<sup>8</sup> Source: The European House – Ambrosetti elaboration of National Central Banks, CIA World Factbook and World Bank data, 2022.

Italy, in 2022, is the **24<sup>th</sup>** country in the EU-27 in the Cashless Society Index.<sup>9</sup> The country has lost **2 positions** since the last edition, reaching the lowest ranking since Index monitoring began (2016).

Moreover, on a geographical level, the Cashless

Society Index confirms the gap between the South and the rest of the country.

In fact, Lombardy is confirmed in **1<sup>st</sup> place** among Italian regions, while all the last 7 positions are occupied by regions in Southern Italy.

### Case study: the Cashback

With the Budget Law 2020 and the appended Fiscal Decree, the Italian government moved toward accelerating the cashless transition through the "Cashless Italy" Plan. Specifically, among other actions included in the final version of the Plan, the Italian government provided for a **"cashback" bonus** for purchases made with payment cards with an allocation of about **€3 billion** for the years 2021 and 2022.

Activated in December 2020, the state "Cashback" has been a driving force for the cashless culture. In fact, the additional revenue for the state, in terms of the recovery of the underground economy and VAT gap, is estimated at **€5.9 billion** through 2022, as a direct effect of the measure's introduction, and **€3.4 billion** in 2023 and 2024, as an indirect effect of the measure's introduction of the pro-cashless culture, for a total over the five-year period 2020-2024 of **€10.3 billion** in recovered VAT. Finally, in terms of consumption growth and tax induced, The European House – Ambrosetti estimated that "Cashback" can enable up to **€24 billion** of additional consumption, with additional revenue of about **€4.4 billion**.

**70%** of Italians say that the state "Cashback" has prompted more frequent use of electronic means of payment, and **39%** say that this has also led to an impact on increased consumption. In addition, it is important to note how the effects of the state "Cashback" measure are more pronounced among young people and in the South of Italy: **93.3%** of those in the 25-30 age group and **77.1%** of residents in the South of Italy say that the state "Cashback" has prompted them to use electronic payments more (compared to an Italian average of 69.9%). In fact, the percentage of citizens who experienced refusals to accept cards from merchants decreased by 18.3% compared to 2019, from **31.2%** in 2020 to **25.5%** in 2021.

However, with a rule included in the draft of the Budget Package for 2022, the government put an end to the state "Cashback", which had already been suspended for the second half of 2021 with the intention of reinstating it in the first six months of 2022. On one hand, the end of the "Cashback" allows the state to recover about **€1.5 billion** euros that will be allocated to other measures, but on the other, it leaves a gap in incentives for electronic payments, which, as seen above, can be a lever for the revitalization of the Country-System.

Source: The European House – Ambrosetti elaboration of Community Cashless Society data, 2022.

<sup>9</sup> The Cashless Society Index is made up of two macro-indices: 30 percent of the overall score is determined by the **"Enabling Factors"** macro-index, which considers the KPIs: households connected to the Internet (%), individuals with Next Generation Access coverage (%), enterprises with broadband access (%), enterprises with high levels of digital intensity (%), number of POS (per million inhabitants), number of ATMs (per million inhabitants), mobile broadband subscriptions per 100 inhabitants and individuals who have interacted with the P.A. online in the past 12 months (%). However, the remaining 70 percent of the overall score is determined by the macro-index **"State of Payments"**, which considers these KPIs: number of credit and debit card transactions (per capita), value of payment card transactions (out of GDP), value of ATM withdrawals (out of total private consumption), number of RIDs (per capita), individuals who have used the Internet in the last 3 months for internet banking (%), individuals who have shopped online (%), businesses that have received orders online (%), and e-commerce revenues (% of total revenues).

## 4.3 THE NRRP AS A HISTORIC OPPORTUNITY TO ACCELERATE THE DIFFUSION OF TECHNOLOGY AND DIGITAL IN ITALY

### 4.3.1 The resources allocated by the NRRP for digital transition

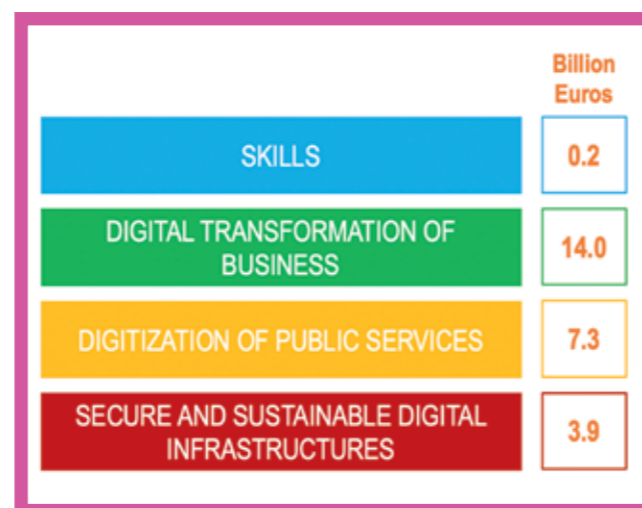
Within the NRRP, **€48.1 billion (25.1%** of total resources) **are dedicated to digital transition**, a figure **9.8 times** higher than the amount allocated in 2019 for the Ministry of Economic Development.

In light of Italy's structural difficulties in the deployment of infrastructure and culture for digital and technologies, the government has therefore decided to exceed the European Commission's minimum requirement of **20%** of Next Generation EU resources.

The majority of digitization spending (about **68%**) will be managed by the public sector, while the share of spending managed by the private sector, limited to measures for "Enterprise Digitization" and part of investment in "Research and Development", is less than 1/3 of the total (**32%**).<sup>10</sup>

As shown in *figure 4.8*, the resources allocated for the digital transition are divided into

four macro areas: "Skills" (**€0.2 billion**), "Digital transformation of enterprises" (**€14.0 billion**), "Digitization of public services" (**€7.3 billion**) and "Secure and sustainable digital infrastructure" (**€3.9 billion**).



**Figure 4.8** Funds allocated in the NRRP for Digital Transition by macro-area of intervention, 2022.  
Source: *The European House – Ambrosetti elaboration of OCPI (Observatory on Italian Public Accounts) data, 2022.*

### 4.3.2 The NRRP's contribution to the achievement of digital transition goals

Impact analysis on the KPIs of the NRRP,<sup>11</sup> shows that while the allocated resources will provide for full achievement of the "Digital Transformation of Enterprises" and "Digitization of Public Services" goals, they are insufficient to resolve Italy's shortcomings in the area of digital "Skills" and the deployment of "Secure and Sustainable Digital Infrastructure". The NRRP's largest investment (**€14.0 billion**),

"Transition 4.0", consists of a **tax incentive** program **aimed at the digital integration of enterprises**, particularly SMEs. Specifically, the measure consists of providing three types of tax credits to companies that invest in:

- **Capital goods** (tangible and intangible assets directly related to the digital transformation of production processes);

- **Research, development and innovation;**
- Digitization **training** and related skills development **activities**, the latter in particular focusing on SME up-skilling.

Thanks to these measures, it is estimated that the number of SMEs with basic digital intensity level will increase to **97%**, **thus exceeding the EU-27 target** of 90%.

Approximately **€6 billion** have been allocated to the **Digitization of PA**, with investments earmarked for digital infrastructure, migration to the cloud, data and interoperability, digital services and digital citizenship, and cybersecurity. The main investment, "Digital services and digital citizenship" (**€2 billion**) has among its objectives the improvement of the quality and usability of digital public services, the strengthening of national digital service platforms and the digitization of public notices.

The allocated resources will make it possible to complete the issuance of digital identities to **100%** of citizens before 2030, exceeding the EU-27 target of 80% by **20 p.p.**

However, in the remaining two policy areas, the NRRP will not be sufficient to close Italy's gaps with the rest of the EU-27.

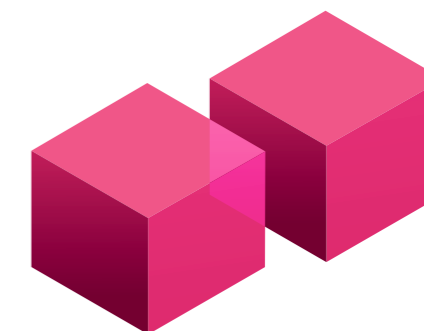
The investments planned in the NRRP (**€200 million**) for the Digital Civil Service and the Digital Facilitation Service Network are not enough to reach the target in terms of **basic digital skills** of citizens. The level of digital skills will remain **16 p.p. below the targets** (reaching **64%** compared to the projected **80%**).

Approximately **€3.9 billion** are earmarked for the **"Italy to 1 Giga"** Plan and aim to provide connectivity of at least **1 Gbps** download and **200 Mbps** upload to residential housing units that, as a result of the mapping of present or planned infrastructure as of 2026 by market operators, were found not to be covered by at least one network with download speeds of **300 Mbps** or more. Even in this macro area, **the allocated investments are not sufficient**, and

it is expected that a gap of **71%** of the areas will require additional private investments and 15 million homes will remain unconnected. Therefore, **further investment**, especially from the private sector, will be **needed** to reach the targets set by the EU-27. As seen above, however, the telecommunications sector does not have the necessary margins to invest more resources.

It is therefore necessary to redesign incentives and reshape the interactions among sector players to ensure that the country has the digital infrastructure necessary for the competitive development of the Country-System.

Overall, the structural impacts enabled by the NRRP are extremely significant and may amount to **+1.9% of GDP** in 2026. In addition, the impacts of the NRRP will continue to unfold until 2036.



<sup>10</sup>Source: The European House – Ambrosetti elaboration of OCPI (Osservatorio sui Conti Pubblici Italiani) data, 2022.

<sup>11</sup>Source: "NRRP Observatory: one year after launch", 2022.



**Figure 4.9.** Summary structural impacts of the NRRP (% value compared to the baseline scenario): up to 2026 (left chart), from 2026 to 2036 (right chart). *Source: The European House – Ambrosetti elaboration, 2022*

As can be seen in the chart above, **PA Digitization and increased business productivity enabled by technology and digital will consist of +1.2% of GDP**, thus

providing an important boost for the revitalization and competitiveness of the Country-System.

### Final considerations on the role of education for the proper management of technologies and for imparting a positive direction to change

In a context of technological revolution and a phase of change, which brings with it on the one hand valuable opportunities for the development of the Country-System, but also challenges to be managed, communication assumes a fundamental role in directing the country's society and businesses toward **positive, inclusive, and sustainable change**.

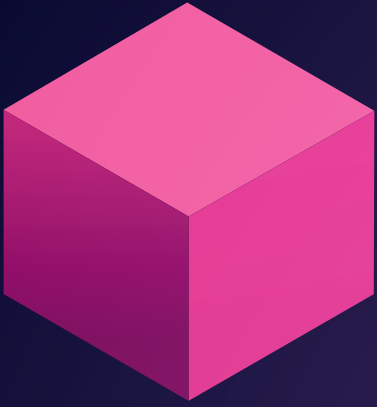
As illustrated throughout the Report, new technologies, and in particular the digital world, have completely revolutionized the habits and tools available to individuals and communities, introduced new paradigms in their social interactions, influenced their use of time, as well as their cultural references. The transformative impact of the digital world on society can be positive or negative, but this is strongly influenced by the education of individuals and their degree of awareness and responsibility in using these technologies.

From this point of view, digital education and communication assume a key role in **conveying the educational and value messages necessary for the positive development of individuals and the Country-System**.

In particular, it is a guiding role for technological and digital development that, on the one hand, ensures the protection of individuals in the face of the risks and potential harms of digital environments (primarily cybersecurity), and on the other hand, enables an inclusive development of society as a whole (e.g., ensuring that everyone has the appropriate skills and infrastructure to take advantage of digital tools). In sum, the role of communication should be to reach out to individuals, particularly the young and the elderly, with educational initiatives and messages that aim to provide them with the practical and theoretical tools and skills needed to deal with digital environments in a knowledgeable and positive way.

In addition, in light of the concrete opportunities offered by digital and technologies as a whole for business development, and in view of a macroeconomic framework that imposes new economic challenges and offers new opportunities for the renewal of the Business-System and the revitalization of the economy, **the task of communication is also to direct Italian companies toward a culture for digital**.

In this perspective, communication is called upon to promote in a simple and effective way the benefits of new technologies, contributing to the diffusion of new paradigms in the Systems-Business. It therefore assumes a strong role of social responsibility, as it is decisive for the medium- to long-term developments of the competitiveness of our economy, and consequently, of the quality of life of the next generations.



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