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Opportunities and Challenges of Sustainable Development and Digital Revolution: the Italian case of Toolery

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Abstract

This article explores how Digital Transformation can provide support for achieving the Sustainable Development Goals (SDGs) of the UN's 2030 Agenda. The article aims to provide a case study of the use of technology in a low-tech sector, the construction industry, in order to make the costs of reducing the positive impacts on the environment and people sustainable from an economic point of view as well. The article produces practical implications by describing strengths, weaknesses opportunities and major challenges of digital technologies for designing sustainable business models..

Keywords: digital transformation, 2030 Agenda, Sustainable Development Goals (SDGs), Start-up, Case study analysis, e-commerce

1. Introduction

The growing attention to the themes of Sustainable Development and the strong push towards digitalization are affecting all sectors of our society, deeply changing its dynamics. The nexus amid both domains foreshows outstanding, yet untapped, opportunities to foster a transformation towards sustainable development (Osburg e Lohrmann, 2017). In fact, it is possible to consider the synergy between Digital Transformation (DT) and Sustainable Development a winning combination (Atos, 2018) but still not potentially exploited (Del Rìo Castro et al., 2020). Digital Transformation, understood as the set of changes that digital technology causes or influences in all aspects of human life; (Stolterman & Fors 2004) it is reshaping work, leisure, relationships, education and governance. At the same time, this revolution allows the transformation of entire sectors of society, directing business towards more efficient, productive and sustainable models. Nowadays, digitalization is heralded to be one of the most promising transformations for sustainability (Gouvea et al., 2018). In order to understand the possible positive implications of digitization for Sustainable Development, the above-mentioned work aims, therefore, to answer the following Research Questions (RQs): in order to accelerate the change process in a sustainable perspective, why governing DT is a challenge to take over? (RQ1). Why implementing more sustainable business models can represent an opportunity for Italian growth? (RQ2). The study is structured as follows: the first section introduces the topic, the RQs and the motivation of the

article; the literature review provides an overview of the Digital Transformation and a review of the main stages of Sustainable Development up to the adoption of the 2030 Agenda. The methodology illustrates the chosen case study in order to analyze the implications of DT for Sustainable Development; the fourth section outlines the results achieved resorting to an impact assessment on the Sustainable Development Goals (SDGs) from a multidimensional perspective. Discussion aims to fill the gap between Digital Transformation and Sustainable Development answering the first Research Question. In conclusion, the second Research Question is answered by providing a S.W.O.C analysis of the case at hand, specifically linking the opportunities of the study with the national strategy.

2. Literature review

2.1 Digital Transformation

Nowadays, when we talk of Digital Transformation we mean restructuring an organization to use any and all information and network-based technologies that increase its competitiveness, in a way that, over a period of time, excludes and out-competes untransformed organizations (Baker, 2014). Digital technologies are disrupting across the economy and society. Digital Transformation (DT) refers to "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies" (Vial, 2019). The process of digital transformation manifests in new institutional arrangements, bringing about novel values, practices, and structures impacting the established rules of the game and contesting contemporary logic constellations (Hinings et al., 2018). Digitalization brings novel cultural, holistic and multidimensional phenomena (Boyd and Crawford, 2012). Digitalization is not a single entity or technology; rather, it is a highly interconnected system in itself. It represents the convergence and interplay of many fields, such as computer science, engineering, informatics, mathematics, biotechnology, nanotechnology, and manufacturing. (TWI2050, 2019). One thing that is agreed on is that Digital Transformation, whether within a corporation or within an industry, is the largest change sweeping businesses and organizations today (Baker, 2014). In this direction, the European Commission through the "2021 Commission work programme – from strategy to delivery", aims to make Europe healthier, fairer and more prosperous, while accelerating the transformation to a greener economy ready for the digital age. To achieve these goals, the Commission will ensure in this Digital Decade of Europe defined targets for 2030 in areas such as connectivity, skills and digital public services (European Commission, 2020). The first pillar of the package announced by the President of the European Commission, Ursula Von Der Leyen, is that of a digital economy deeply centered on people. The Commission plans to invest heavily in digital skills development and training for all Europeans, including a Digital Education Plan for digital literacy and skills development. In addition, the strategy aims to accelerate investment in the ability to deliver high-speed data connectivity through an update of the European Action Plan on 5G and 6G. The actions proposed within the strategy have as a second pillar to foster a healthy and competitive transition of Europe to the digital economy. This is ensured, among other things, through the establishment of an EU action plan for the industry facilitates the transition to digital for European companies and strengthen the rules of the single market. But where does Italy stand in relation to this wave of global innovation? We are clearly answered by the Commission's Digital economy and society index (DESI), which in 2019 placed us 25th in Europe after Croatia, Slovakia, Cyprus and Hungary. An indicator of European digital performance, the DESI analyzes the evolution of member states on the basis of five dimensions: the ability to provide a high-speed data connection (Connectivity), advances with respect to the digital skills of citizens (Human capital), the frequency of use of online services such as e-games, music, video, online shopping and online banking (Use of internet), the degree of digitization of businesses and the spread of e-commerce systems (Integration of digital technology) and finally the level of digitization of public services (Digital public services). A comparison of the five dimensions of the index shows how the infrastructure for high-speed data connection has more than doubled since 2014 with investments in mobile broadband networks; however, this growth does not seem to have influenced the other dimensions which, since 2014, have suffered from a stagnant or profoundly slow evolutionary dynamic. Finally, it emerges that the level of digitization of businesses is very low and the use of internet is still not widespread in our country. To weigh negatively on the digitalization of the industrial sector is above all e-commerce while, as far as the use of internet is concerned, online transactions are less widespread. Public policies in favor of digital transition must therefore necessarily consider these shortcomings and act in this sense to allow Italy to approach its European peers. Reconciling technological innovation with social and environmental issues in order to design better societies and economies is the real historical challenge to be faced and may represent a unique development opportunity.

2.2 Sustainable Development

The notion of Sustainable Development has its roots in the distant seventies, when awareness began to spread that the Fordist production model, characteristic of industrialized society (Sebastiani, 2014), was having serious repercussions on natural systems. In particular, it was the oil crisis of 1973 that laid the foundations for the construction of a better future for all humanity. In fact, with the war between Israel and Arab countries, the price of oil increased which resulted in a consequent increase in energy costs and inflation. As a consequence, therefore, of the energy crisis, many countries of the world were forced to adopt drastic austerity policies in order to limit energy consumption. This event, represented for the West the first real opportunity to stop and think about the use of natural resources of the planet, now limited, as they considered the use of renewable sources as an alternative to oil and fossil fuels. The industrial community therefore began to question the consequences of its actions (Petrini, 2012). We can therefore say that the idea of a model of responsible consumption began to take shape in the early 1970s, the decade in which the UN Conference on the Human Environment was held. To support this thesis, the report on the "Limits to Development" commissioned by the Club of Rome and carried out by some scholars from the Massachusetts Institute of Technology (Boudes, 2014). The document illustrated the results of a computer simulation of the interactions between industrialization, consumption of resources, population, food production, pollution and their exponential growth over time. Although a tragic fact emerged, namely that in a short period of time all environmental and energy resources would be exhausted as a result of a careless growth in production, it also raised hopes that this catastrophe could be avoided by pursuing a type of development that would not cause the total consumption of the earth's resources (Meadows et al., 1972). In order to achieve this type of development, however, it was necessary that attention to the environment be accompanied by the principles of economic growth and long-term improvement of living conditions. In order to have a complete vision of the steps that have been taken over the years in favour of Sustainability, it is essential to retrace the most important stages of this path. The Stockholm Conference, convened by the United Nations and held in Sweden from the 5th to the 16th of June 1972, marks the beginning of the path towards Sustainable Development. Following the Conference was established UNEP "United Nation Environment Programme", a specialized agency of the UN in order to protect the environment and raise awareness of the community to responsible behavior (Lafratta, 2004). In 1980, the collaboration between UNEP, IUCN and WWF resulted in the first document integrating conservation with the sustainable use of natural resources, "The World Conservation Strategy: Living Resource Conservation for Sustainable Development" (IUCN et al., 1980). Nowadays, in order to define the concept of Sustainable Development, we refer to its most widespread and shared definition, elaborated in 1987 by the World Commission on Environment and Development and contained in the Brundtland Report "Our Common Future", whose name derives from the then Norwegian Prime Minister Gro Harlem Brundtland who chaired that commission: "Development which meets the needs of current generations without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). In 1991, the three organizations IUCN, UNEP and WWF published "Caring for the Earth: A Strategy for Sustainable Living". With this document it is stressed how important it is to improve the quality of life of human beings, respecting the regenerative capacity of natural resources (IUCN et al., 1991). In 1992, in Rio de Janeiro, Brazil, was held the largest conference in history organized by UNCED: the "Earth Summit". It was attended by heads of government from around the world, representatives of 172 states and many spokesmen of non-governmental organizations, all gathered to discuss the future of humanity and the environment. (UNCED, 1992). In the same year, in Brussels, the European Union approved the Fifth Environmental Action Plan "Towards Sustainability" (EU, 1992). In 1994, the "Aalborg Charter" was approved during the "European Conference on Sustainable Cities and Towns". Through this document, European cities committed themselves to applying "Agenda 21" and to promoting long-term sustainable action programs at the local level (Lafratta, 2004). In 2000, the United Nations Millennium Summit was held where the eight Millennium Development Goals (MDGs) were defined, which all 193-member states of the UN committed to achieving by 2015 (UNDP, 2015). Eight goals were identified: reduce hunger and poverty, improve education, equal opportunities and empower women, improve the health of children and their mothers, combat diseases, ensure sustainable development and promote economic development (Lafratta, 2004). 2002 was the year of the "World Summit on Sustainable Development", held in Johannesburg. The document "Plan of Implementation of World Summit on Sustainable Development" was drafted through which the importance of the Millennium Goals defined in the "Millennium Declaration" was reaffirmed; the commitment to promoting the principles for sustainability elaborated during the "Earth Summit" in Rio was renewed and the implementation of "Agenda 21" was continued (UN, 2002). 2010 was the year of the "Europe 2020" Strategy: an action plan to ensure sustainable, smart and inclusive growth of the European economy for the decade 2010-2020 (EU, 2010). In 2012 the "United Nations Conference on Sustainable Development" (UNCSD) took place,

also known as “Rio+20”, because it took place twenty years after the “Rio de Janeiro Earth Summit”. From the Conference emerged the document “The Future We Want” which addressed issues of fundamental importance for the future of the Earth. The meeting was an opportunity for the governments of the countries of the world to take stock of the results obtained so far during the path undertaken a few years earlier and to establish new common goals to be achieved (UN, 2012). On the occasion of the Summit on Sustainable Development that took place, from 25 to 27 September 2015, in New York, the 2030 Agenda was presented: an ambitious and innovative strategic framework of the United Nations for the world, signed by the governments of the 193-member countries (UN, 2015a). In fact, it represents a real program of action aimed at the planet, at people and for prosperity. The 2030 Agenda is the result of a long and complex process, which started with the World Conference on Sustainable Development “Rio+20”; on that occasion, the UN member governments took on the task of enriching the interventions in favor of sustainable development. Among these, that of defining new development goals to take the place of the previous ones: the “Millennium Development Goals”. Thus, 17 new goals were born: “SDGs - Sustainable Development Goals” to be framed in the Post-2015 Agenda. The new goals start from the results achieved by the MDGs and complete what the MDGs failed to achieve, with 169 targets and more than 240 indicators. They are universal, i.e. they are addressed to both developed and developing countries; they are interconnected and at the same time they are indivisible and common: in this long journey all must advance in the same direction, without exclusions and distinctions With the signing of the 2030 Agenda and the launch in 2016 of the Sustainable Development Goals, the UN countries have made themselves responsible for the future of the world for the next fifteen years. UN Secretary-General Ban Ki-moon says: "The new agenda is a promise by leaders to all people everywhere. It is an agenda for people, to end poverty in all its forms - an agenda for the planet, our common home". All countries must therefore commit themselves to ensuring that these goals can be achieved at all levels of society.

3. Methodology

The case study focuses on the work carried out by the innovative startup Toolery which aims to digitise the entire site procurement process for construction companies by offering the possibility to put leftover site materials back on the market in a circular economy perspective. The construction industry has been particularly affected by the crisis of the last few years and for this reason it needs more and more innovation. Toolery's contribution aims precisely at underlining not only the infinite potential for building companies capable of bringing innovation to the market, but also a good response of the latter to an increasingly flexible and digitized vision of the building sector. Toolery is a platform that allows companies to buy building materials online and have them delivered directly to the construction site, avoiding unnecessary waiting at building material retailers. Toolery not only simplifies internal processes, but also provides an opportunity for construction retailers to bring their products online and tap into new customers and opportunities. In addition, the platform provides an opportunity for construction companies to re-circulate supply chain waste. According to Ekanayake and Ofori (2004), construction waste is defined as a material, other than the material of the earth, that is transported to another place on the project site or used on the project site and does not conform to the specifications of the project because it is damaged, excess and unused/unusable or a production of the construction process that is not according to plan. In construction, waste can be a delay of time, lack of security, reworking, excessive costs, unnecessary travel or transfer, long shipping distances, imprecision in the selection of operation methods or bad management tools and capacity-building measures. The aim is to revolutionise the construction industry by innovating purchasing processes through ecommerce and delivery. In this sense, this one is a start-up that can say they got a major boost from the pandemic. In the undeniable tragedy of the current situation, companies and citizens have found themselves necessarily having to exploit the means and potential of digital technology, which has propelled the country forward by five years in just under a year. For Toolery, operating in the construction sector, the coronavirus has been a moment of reflection, strongly increasing building retailers' awareness of the importance of multi-channel sales and therefore the importance of digitalisation. With this in mind, the start-up strongly believes that the idea behind the project has taken on even greater value, which is why it is offering its customers the opportunity to access the service at a heavily discounted price to accelerate digitisation and increase the competitiveness of the sector.

3.1 Context

There are 11,241 building material dealers in Italy, specifically 4,548 wholesale building material dealers and 6,693 building material dealers. 45% of construction warehouses are located in the south of Italy, although almost 60% of the sector's revenues are generated by companies in northern Italy. The total turnover of the sector is around 18 billion. Construction companies lose between 50 and 80 minutes in a row at the retailer's and, in the event of an unforeseen shortage of material on the construction site, they have to wait until the next day to replenish the necessary material, generating a further loss of time. In Europe, there is as yet no specialised "last mile" service for building materials. Large distribution centres such as Leroy Merlin, OBI or Bricoman only deliver within 5 to 7 working days. companies support the Toolery service mainly in two ways: by going directly to the supplier in the morning, before starting the working day; or the day before, in the evening, by buying everything needed for the next day. With the Toolery service, the time savings for companies are considerable, considering that an average company on arrival at the dealer has to queue to create or collect the order sheet, queue in the warehouse and queue again in the sales office to collect the transport document.

4. Results

A corporation's ultimate success can and should be measured not just by the traditional financial bottom line, but also by its social and ethical and environmental performance, according to a Triple Bottom Line approach (Norman &MacDonald, 2004). Many organizations have the desire to be more sustainable, but according to the organizations themselves, they lack the structures needed to proceed (Vandenbrande 2019). A platform such as Toolery, which digitizes the entire delivery process in the construction industry through the provision of a digital service, produces several positive impacts on the ground for the environment, people, and the economy. In this paragraph we highlight, therefore, some initiatives and interventions implemented by the start-up that, if shared and maintained in the long term, can represent a push for change in the Italian construction sector in favor of Sustainable Development. In order to illustrate the effectiveness of the role of Digital Innovation in support of the aforementioned smart building platform in achieving the Sustainable Development Goals, we have resorted to a multidimensional impact assessment (environmental, economic and social), both in the short and medium-long term, of the direct and indirect effects generated on the Goals of the 2030 Agenda, the Action Plan through which the UN member countries have made themselves responsible for the future of the world for the next fifteen years after its signing (UN 2015a). Much has been accomplished since its adoption, but it is also well known that more action is needed to make the world's actors truly sustainable (Laszlo et al., 2005). Table 1 shows, therefore, the characteristics and areas of intervention adopted by the start-up in line with the Sustainable Development Goals of the 2030 Agenda. Considering the characteristic of digital platform, using IoT technologies allows to generate several benefits in terms of efficiency of resources, saving time and money and increasing the loyalty of customers and suppliers who want to protect the planet.

Table 1. “Toolery SDGs Mapping”

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Affordable e-commerce	✓							✓	✓	✓	✓					✓	✓
Digital document dispenser							✓		✓			✓	✓		✓		
Delivery efficiency algorithm									✓		✓	✓	✓		✓		

Source: Author’s elaboration

- Affordable e-commerce: the potential contribution of Toolery.eu in this direction is mainly expressed in the ability to increase the productivity of workers by enhancing and supporting the local economy, with clear benefits on economic growth and decent work for all. Digitization, in this sense, can help smaller realities, which very often are at a disadvantage because of the large-scale retail trade, to get in touch with customers. Another feature of the e-commerce platform with regard to the general positive social impacts concerns precisely networking and activating synergies by

implementing policies and mobilizing resources to support accelerated investments in actions to combat poverty. Another feature that resides in its digital nature is represented by the potential capacity to achieve several Sustainable Development Goals. In the specific case of Toolery, which refers to the construction sector, the SDGs achieved on the basis of what has been analyzed are: 1 “End poverty in all its forms everywhere”, 8 “Promote inclusive and sustainable economic growth, employment and decent work for all”, 9 “Build resilient infrastructure, promote sustainable industrialization and foster innovation”, 10 “Reduce inequality within and among countries”, 11 “Make cities inclusive, safe, resilient and sustainable”, 16 “Promote just, peaceful and inclusive societies” and 17 “Revitalize the global partnership for sustainable development”.

- Digital document dispenser: one of the most obvious benefits of digital transformation is the fact that it’s scaling back on the use of paper such as books, files, magazines, contracts in lieu of digital communication and digital file management. Cloud storage helps eliminate paper waste and the overhead costs of traditional storage and secure shredding. It also makes accessing documents from anywhere even easier (Newman, 2017). In addition, the following feature enables employees, customers and suppliers to access documents from anywhere, decreasing waste and costs related to energy consumption, commuting emissions, and so on. All these elements allow, therefore, to meet the objectives: 7 “Ensure access to affordable, reliable, sustainable and modern energy”, 9 “Build resilient infrastructure, promote sustainable industrialization and foster innovation”, 12 “Ensure sustainable consumption and production patterns”, 13 “Take urgent action to combat climate change and its impacts" and 15 "Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss”.

- Delivery efficiency algorithm: although firms have recognized the importance of supply chain innovation, they still find it difficult to innovate in isolation. Indeed, as Sumo, Valk, Weele, and Bode (2016) concluded, collaboration among partners is necessary to incorporate innovation into firms, and this involves integrating and exchanging information with others (Cao and Zhang, 2011). Supply Chain Innovation refers to an interconnected set of processes which deal with uncertainties and disruptions in the firm's internal and external environment in order to provide novel and innovative solutions to end users (Lee et al., 2011). In the long run, organizations achieve a sustainable competitive advantage by developing key competencies and, in this way, provide better services to their target customers than their competitors. Srivastava, Franklin, and Martinette (2013) explained key competencies as a set of unique competencies developed in organizations’ key areas, including factors like innovation flexibility, customer service, quality and responsiveness which help organizations to outdo their competitors. Thus, in this scenario, competitive advantage is a state where organizations possess better resources and implementation abilities in order to cut costs, get better business performance and create added value for customers in long-term competition with rival firms. The use of digital not only helps manage the supply chain but also allows for more efficient planning of shipping and transportation routes thanks to “driver correspondence” with direct benefits on decongesting mobility and reducing pollution. Therefore, the SDGs achieved are: 9 “Build resilient infrastructure, promote sustainable industrialization and foster innovation”, 12 “Ensure sustainable consumption and production patterns", 11 “Make cities inclusive, safe, resilient and sustainable”, 13 “Take urgent action to combat climate change and its impacts” and 15 “Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss”.

5. Discussion

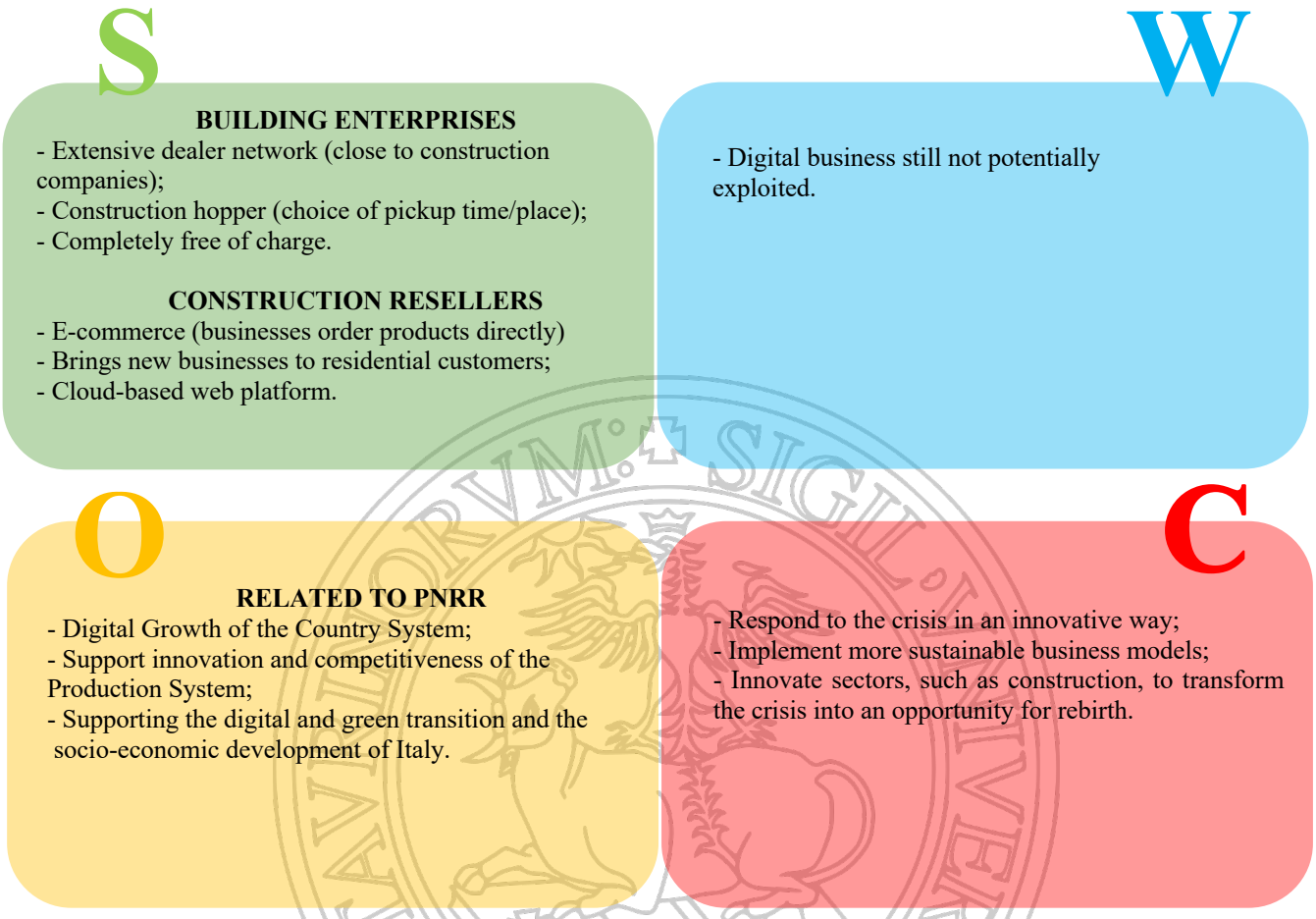
The potential contribution of Digital Transformation to the achievement of the Sustainable Development Goals (SDGs) is increasingly evident and highlighted by scholars and practitioners (Bonomi Savignon, 2020). According to Enrico Giovannini (2020), the Digital Revolution is a necessary condition for the transformation of consumption and production models (Epifani, 2020). This revolution allows, in fact, the transformation of entire sectors of society, orienting business towards more efficient, productive and sustainable models. But what are the possible implications of digitalization for Sustainable Development? Undoubtedly, the digital component will represent a fundamental vector for the achievement of the ambitious Sustainable Development Goals (SDGs) of the 2030 Agenda; in fact, digital solutions can be considered the main enablers to support a green and long-term transition on a global scale. In order to bring the world on a path of Sustainable Development, the Digital Revolution assumes, therefore, a fundamental role. The objective of this work was to analyze the implications of digitization for Sustainable Development and for the 2030 Agenda, through the description of the case study of Toolery, an Italian e-

commerce platform operating in the construction sector, with reference to the achievement of the UN Sustainable Development Goals. In this direction, to innovate means to provide a digital service to create a positive impact for the environment, people and economy: from an environmental point of view, to improve, through the digitalization of procurement and distribution processes, the entire supply process in the construction industry, minimizing waste and CO2 emissions; social, generating decent work and reducing the risk of loss related to territorial realities; economic, providing digital services for small retailers in the area that support the local economy against the large-scale retail trade. In this direction the use of online, can represent, therefore, not only a valuable ally to increase their productivity but allows you to create a culture oriented to sustainability and responsibility that surrounds the various business. The discussion, through the analysis of the case study, wanted to highlight why governing the Digital Transformation represents a challenge to be taken to accelerate the processes of change in a sustainable perspective. Digitalization could accelerate sustainable transitions, particularly ecological and social shifts in the industrial domain (Beier et al., 2017) as support human progress and reframe the business case for both investors and consumers (Holst et al., 2017) and drive resource efficiency. This means for building a successful business, Digital Transformation and Sustainability have to complement one another. For this reason, the Digital Revolution should not be viewed as being outside or separate from Sustainable Development and their convergence must be ensured to achieve solutions for the SDGs. It seems therefore right to make a consideration: the technology movement we credit with improving customer experience and changing the face of the modern business landscape (Newman, 2017) can also make a large contribution in helping organizations, cities and nations better meet their sustainability goals. The case study of the Toolery platform teaches us, therefore, that thanks to the use of technology, great results have been obtained, such as in terms of reducing pollution and waste; for this reason, sustainability must become an integral part of the companies' mission. Only through this attitude they can continue to survive in the long term, generating a benefit for their businesses and the planet.

6. Conclusion

For Italy, the path towards the UN 2030 Agenda, which already appeared to be uphill before the crisis, has become even more difficult. For this reason, it is necessary to embark as soon as possible on the path towards a "just" ecological transition, capable of generating new employment and economic and social development, using EU and national resources in a coherent manner to relaunch the country with a view to economic, social and environmental sustainability (ASviS, 2020). The advancement of the digital transition in this process of growth and improvement can help to meet this need. It seems fundamental, therefore, to perceive the use of digital as a valid support to the achievement of the SDGs. Sustainable Development and Digital Transformation represent, in fact, the strategic priorities also of the new National Recovery and Resilience Plan (NRRP) aimed at providing Italy with an answer to the main challenges it will have to face in the coming years, among which promoting, in line with the strategic objectives shared with Europe, the green and digital transition (Italian Government, 2021). Specifically, the strategy, aimed at giving concrete implementation to the NextGenerationEU Program - the tool designed to stimulate post-pandemic recovery for a greener, digital and resilient Europe (European Commission, 2020) - through the resources allocated also intends to accelerate the pursuit of the 17 SDGs in order to proceed to an impact assessment related to the implementation of the missions, at national and territorial level. According, in fact, to current estimates, the NRRP will have a positive impact on the main macroeconomic variables and indicators of inclusion, equity and Sustainable Development through increased investment that will activate directly and indirectly and technological innovations that will introduce and stimulate. Italy, especially thanks to the choices made by the European Union, is becoming aware of the need for a change in the direction of sustainable development (ASviS, 2020). For Italian companies, therefore, taking advantage of incentives will represent a strategic opportunity to innovate in a "green" perspective. Figure 1 shows the S.W.O.C. analysis carried out for the case study in question, which illustrates the strengths and weaknesses of a highly digital reality such as Toolery, considering the Italian context, the opportunities linked to the PNRR and the main challenges to be taken up with a view to long-term improvement.

Figure 1. "S.W.O.C Analysis"



Source: Author's elaboration

Nowadays, the role of start-ups in Italy is increasingly relevant on an economic level. In a world where it's difficult to keep old businesses afloat, the thought of starting new ones is distressing, but also an indication of great courage and inventiveness that is fundamental to the life of the country. For this reason, the PNRR can be an opportunity to implement more sustainable business models. How? Through favorable funding, in line with the three strategic lines proposed by the Plan: digitization and innovation, fundamental to make Italy a protagonist in the global technological competition and strictly connected to the second pillar of the Plan, that is the ecological transition. Digitization is, in fact, essential to improve the management of energy consumption and resources, in agriculture as in sustainable mobility, feeding new production and research chains and generating employment. Finally, ensuring social inclusion by reducing inequality and poverty, infrastructure and employment gaps and territorial gaps in accessibility to services and achieving gender equality, with action on the multiple dimensions of discrimination against women. Sustainable Development will be key to ensuring the structural reduction of asymmetries and inequalities, between geographic areas and between people (Italian Government, 2021). Policymakers, researchers, companies, and all civil society actors will, therefore, need to intensify their efforts to understand and explain the multiple effects of digital change in order to guide the digitization process towards sustainable (TWI2050, 2019) and forward-looking transformations.

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