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Management and sustainability: Creating shared value in the digital era

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**Management and sustainability:
Creating shared value in the digital era**

20-21 June 2019

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Conference Proceeding***

Extended Abstract

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Al Lettore,

questo volume accoglie i full paper del Convegno Sinergie-SIMA 2019 *Management and sustainability: Creating shared value in the digital era*, Sapienza Università di Roma, Roma, 20-21 giugno 2019.

La sostenibilità è senza dubbio uno dei temi sfidanti dell'epoca contemporanea. Lo sfruttamento delle risorse naturali legato alla crescente domanda di beni e servizi ha messo in evidenza quanto i modelli economici esistenti siano limitati. Un sistema di produzione e consumo basato su una logica lineare ove le risorse naturali sono estratte e trasformate per la produzione di beni e servizi è chiaramente non sostenibile. Inoltre, l'iniquinà sociale, la povertà, e la fame nel mondo sono problemi sociali che devono essere globalmente affrontati.

Lo scopo del Convegno è discutere dei modelli di business sostenibili e delle necessarie evoluzioni strategiche come sfide per la gestione dell'impresa nel prossimo futuro. Un focus particolare è rivolto allo sviluppo di modelli di business e strategie basate su paradigmi di co-creazione di valore e alle opportunità oggi offerte dalle tecnologie digitali.

Alberto Pastore, Federico Testa, Gennaro Iasevoli e Marta Ugolini

Cari Lettori e Convegnisti,

il *call for paper* del Convegno Sinergie-SIMA 2019 *Management and sustainability: Creating shared value in the digital era* ha previsto la possibilità di presentare *extended abstract* oppure *full paper*. In totale sono pervenuti in redazione 102 *extended abstract* e 51 *full paper*.

Per gli *extended abstract*, la valutazione dei contributi ricevuti è stata operata dal Comitato Scientifico in base alla coerenza con il tema del Convegno e/o con gli studi management secondo i Gruppi Tematici SIMA, alla chiarezza e alla rilevanza (anche potenziale) dei contenuti proposti.

Per i *full paper*, la procedura di valutazione dei contributi è stata condotta secondo il meccanismo della *peer review* da parte di due referee anonimi, docenti universitari ed esperti dell'argomento, scelti all'interno dell'Albo dei Referee della rivista *Sinergie*.

In particolare, i referee hanno seguito i seguenti criteri nella valutazione dei contributi:

- chiarezza degli obiettivi di ricerca,
- correttezza dell'impostazione metodologica,
- coerenza dei contenuti proposti con il tema/track del convegno e/o con gli studi management,
- contributo di originalità/innovatività,
- rilevanza in relazione al tema/track del convegno e/o agli studi management,
- chiarezza espositiva,
- significatività della base bibliografica.

L'esito del referaggio ha portato a situazioni di accettazione integrale, accettazione con suggerimenti e non accettazione. In caso di giudizio discordante la decisione è stata affidata alla Direzione Scientifica. Ogni lavoro è stato poi rinviato agli Autori completo delle schede di referaggio per la valutazione delle modifiche suggerite dai referee, verificate in seguito dalla Redazione della rivista *Sinergie*.

A seguito del processo di valutazione sono stati accettati 41 *full paper* e 97 *extended abstract*, pubblicati in due distinti volumi. In questo volume dedicato ai *full paper*, i contributi sono articolati nelle seguenti gruppi:

- *Management and sustainability: Creating shared value in the digital era*
- *Management studies*

Tutti i *full paper* di questo volume sono stati presentati e discussi durante il Convegno e pubblicati *online* sul portale della rivista Sinergie (www.sijm.it).

Nel ringraziare tutti gli Autori per la collaborazione ci auguriamo che questo volume contribuisca a fornire un avanzamento di conoscenze sui modelli di business sostenibili e sulle necessarie evoluzioni strategiche come sfide per la gestione dell'impresa nel prossimo futuro.

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Sharing economy and ethical economy: What's the matter?

A case study of a digital native company

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Objectives. *This conceptual paper aims to novel the body of knowledge in the management research field by provoking the debate on a controversial and nontraditional theme: the dilemma whether the sharing and ethical economy are the same or not. The rationale of the study is that, apparently, it exists quite the confusion between the two topics. However, anecdotal evidence indicates the digital revolution is increasing the disparity between companies' sustainable or social values and their market value. This criticism seems to indicate that ethical and sharing economies, on the converse, may not entirely overlap. We suggest that, even though ethical and sharing economy are both based on the concept of "sharing", they are moved by different values and goals. As the consequence, the meaning of the concept of "sharing" completely differs between the two. For instance, the sharing economy brings up an abundance of artificial intelligence and a large request of skilled people. However, a such-shaped business world may favour corruption and unsustainability, thus pushing in the opposite direction of ethical economy. In fact, the ethical economy is driven by commitment and trust, along with "affective affinity". At outcome level, the ethical impact is paramount measured by the social output. So, it calls for new forms of entrepreneurial ideas or genus of entrepreneurship, as instance as social entrepreneurship. The way of running a business is completely changed since the disruptive evolution of the economy during the 90s. From that decade, companies started to be more agile and adaptive to the real world, more customer focused, or collaborative. Thus, moving from the theory X to theory Y (Mcgregor, 1960), today companies tend to collectively reach the output by assuming an ambidextrous attitude (Soto-Acosta et al., 2018; Ferraris et al., 2018; Guisado-González et al. 2017; Scuotto et al. 2017a; Fernández-Pérez de la Lastra et al., 2017). This attitude occurs as the combination of exploitation and exploration behaviours, and involves external and internal stakeholders (Li et al., 2018). However, such the change is not easily supported by all companies' size. For instance, small to medium -sized enterprises have been more reluctant than corporates, because of their lack of resources in terms of capital, technology, and skilled employees (Scuotto et al., 2017). This has brought up a new economy and, namely, the sharing economy, which is characterized by the presence of a hybrid marketplace, where people partake tools, ideas, and infrastructures thanks to the use of advanced technologies (Jonathan et al 2015). In this sense, the sharing economy represents the answer to corporate ambidexterity. The ethical economy also occurs in the form of bottom-up-emerged networks, but, in this case, the sharing principle has a totally different semantic.*

The concept of "sharing" - activities, goods and services - is not properly a recent approach. As a matter of fact, it has always been employed by all those people living in poor Countries or similar contexts from the dawn of times, as a means to achieving survival. In such cases, the collaboration is fostered by local proximity. According to Botsman and Rogers (2010), the sharing economy is based on actions such as donating, renting, investing, and exchanging. They also distinguish this economy from the logics of collaborative consumption or collaborative economy: whilst the first one regards the opportunity of employing goods and services, the second one refers to a model for what communities are tied together and they collaborate to support each other. Freken et al. (2015) state that the collaborative economy is aimed at letting other people use tools which have not been utilised before. However, with the new age and its digital revolution, the sharing economy has also involved the use of new technologies, which allows to go far beyond territorial borders (Grassmuck, 2012; Denning, 2014). For instance, Oxford dictionary (2018) defines sharing economy as an approach where people jointly use the same assets and/or services through the online space. From this scenario, SMEs have found a new way to overcome their limits and achieve their long run goals (Choi et al., 1998). This approach has allowed SMEs to minimizing costs and efficiently use resources, along with the capacity to innovate (Olson and Kemp, 2015). This form of economy is not driven by monetary interests as the capitalist economy but by commitments and trust. Arvidsson (2008) talks about "affective affinity" between people who shares intangible assets like knowledge, ideas, and talent. People are guided by respect and acceptance and so this has induced a new form of economy namely ethical economy. Like the sharing economy, it creates a flow of knowledge and affective intensity.

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Plus, it voices up ideas in a digital joint space, as instance as Facebook. However, the ethical economy measures its output in terms of social impacts rather than of capital value. The latter is a measurement scale for the sharing economy (Chatterji et al., 2006). Different authors (Bonini et al., 2007) gives further consideration to some additional factors, such as consumers' opinion and sentiment. The ethical economy is also bringing new forms of entrepreneurship like social entrepreneurship. Differently, the sharing economy is generating digital native business models (e.g. Airbnb; Uber; Buzzoole, etc). In this scenario, digital native companies are becoming a relevant cohort, shaping the new economy. According to Belk (2014) they are a new generation of firms, whose business model is based on the exploitation of the sharing economy (Rauch and Schleicher, 2015). Most of these firms are seeking to overcome knowledge barriers in the health sector (Sánchez-Polo et al., 2019). They are characterized by lower transaction costs (Sundararajan, 2013) and they propose new ways of running a business (Ritcher et al., 2017). Despite the recent interest for this theme, the relationship between the sharing economy and ethical economy in digital native company has not been explored yet. Thus, current work attempts to conceptually fill this gap as a means to propose a substantial extension to current researches.

Methodology. Given the complex nature of ethics in business, the heterogeneity of methodologies and of conceptions shared by the scholars' community, and also because of the pioneering nature of the two cross-topics, current work explores the territory of ethical and sharing economy by using a case study method. The case study method allows the in-depth exploration of a phenomenon and it is deemed a theory-building approach, useful for designing new theoretical frameworks and to draw future research directions (Yin, 2013; Leonard-Barton, 1990; Sykes, 1990). Hence, on this basis we offer a novel case study based on a digital native company, Timeless. Timeless is a digital platform developed to help people with Alzheimer. This has been developed due to the increase number of patients with such disease and it is generated by the combination of the two different kinds of economies, respectively, the sharing and ethical economy. Alzheimer's disease is affecting more than 44 million of people which are going to grow on a projection of 160 million of patients. Those who are affected by this illness struggle to remember\recognise people and events - past and future.

Timeless was found by Emma Yang, a young girl who recognized the entrepreneurial opportunity linked to such social problem and decided to help. Her grandmother suffered from Alzheimer's disease, so she was primarily motivated by a personal reason. However, she recognized the existence of a huge potential market, because this disease was increasingly affecting a notable portion of adult population worldwide, along with population aging especially in Western Countries. Thanks to her science, technology, engineering, and mathematics (STEM) skills the young founder - only 14 years old- has set up her app and then kicked off thanks to crowdfunding. Her intangible skills were transferred by her father's professional experiences - he works in a tech company. Her business is operating with the support of a multinational company, Kairos, and it is formed by a small international team: a designer from California and a web developer from Germany. Hong Kong university is another partner of this business. Yang's desire was to stand out with her business idea based on ethical principles, sharing economy and social entrepreneurship. These three aspects ideally match with the theme and the assumptions of the current work.

Findings. We would expect that the ethical economy is primary based on achieving a positive social goal; whereas the sharing economy involves a joint collaboration in order to gain profits and leads new digital native companies. In fact, by analysing Timeless, we found a close connection between these two economies. This business seeks to give back a normal life to Alzheimer's patients. It involves different stakeholders such as investors, multinationals, research centre, universities. Alongside, technologies play a relevant role in this scenario. Thanks to this app, patients can recognise their family and friends, remember meetings and be in touch with people who they love. Timeless calls for two elements: updating and recognizing. By circulating a set of pictures and video among family and friends, an Alzheimer's patient can be daily be connected with them. Whereas, through the development of a facial recognition technology by the corporate company Kairos these patients can recognise people who know. Hence, a memory stimulating digital platform based on high -technologies performance is offered. This has resulted in a need of people with digital skills (Scuotto and Morellato, 2013).

Research limits. Despite this research addresses one of the most salient topic in current managerial studies, there are some limitations which can inspire future scholars. For instance, it is based on a single digital native company. Thus, future scholars might extend the analysis by adding further cases and by using a cross-comparative approach. Moreover, case study results cannot be replicated or generalized. This further limit calls for future quantitative investigations. In addition, it could be of interest to group firms by their ethical or sharing nature, as a means to understanding what are the differences between the two economies.

Practical implications. The digital native business can be an inspiration for the development of other forms of businesses which seek to figure out social problems. They hide a new entrepreneurial mindset linked to solving existing social problems rather than creating new needs (Usai et al. 2018). This calls for an engagement of different stakeholders (sharing economy) and the involvement of ethical principles (ethical economy). Thus, this research attempts to stimulate public bodies in supporting new entrepreneurial initiatives. It also evokes a multidisciplinary approach which ask for the commitment of external actors from different disciplines. For instance, business schools along with medical and informatics departments can create a holistic education curricula for the next generation of

entrepreneurs. Students can be stimulated to follow an entrepreneurial career pathway. Underpinned by an technology advanced and accelerated education, universities can “produce” new skilled talents. The benefits can reach out universities as well as the business world. For example, it provides an embeddedness of theoretical activities with industrial practices. The aim is to nurture students’ entrepreneurial spirit and develop a range of standalone products. Additionally, the intertwining of the sharing economy with the ethical economy can both drive new forms of employment and increase the number of entrepreneurs. This will transform educational practices and students’ learning journey, along with business and communities’ life.

Originality of the study. A main problem with the topic under analysis is how to conduct a robust empirical test. As a matter of fact, thinkers of all ages struggled to capture and describe the semantic of ethic, at both epistemology and ontology levels. Considering the inherent nature of the ethic concept, which emanates its most authentic value only at social/collective level, ethics in business may be accounted as naturally “tied to” and “braided with” the concept of collaboration among multiple subjects. In any case, it does not exist, thus far, a unique and holistic representation of the ethic concept, since it reflects the spirit of the time. Business studies have tried to provide definitions of the construct at operating level, thus inflecting the concept in multiple streams and in uncountable ways. Therefore, on the matter of what exactly make a difference between ethical and sharing economy, the present research aims to encourage new debates among scholars, in order to better define these two types of contemporary economy.

Key words: sharing economy, ethical economy, digital native company

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The challenging transition from Industry 4.0 to Society 5.0: the role of open innovation and value co-creation

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Objectives. *Industry 4.0 has already been studied in the management domain, above all in these last four years, but various issues still remain understudied by calling for new and more integrative approaches towards better comprehension and outcomes (Piccarozzi et al., 2018). Recently, a different definition of Industry 4.0 was issued encompassing all the relevant elements that have already emerged in literature and highlighting the role of strategy in enabling the transition to this new production method, which will dramatically change firm business models. Indeed, “Industry 4.0 refers to the integration of Internet of Things technologies into industrial value creation enabling manufacturers to harness entirely digitized, connected, smart, and decentralized value chains” (Prause, 2017, p. 423) able to “deliver greater flexibility and robustness to firm competitiveness and enable them to build flexible and adaptable business structures, [acquiring] the permanent ability for internal evolutionary developments in order to cope with a changing business environment” (Koether, 2006, p. 583) as the result of a purposely formulated strategy implemented over time” (Piccarozzi et al., 2018).*

Clearly Industry 4.0 or the Fourth Industrial Revolution has started profoundly reshaping the production side of the firm, its supply chain, etc. introducing new technologies and tools, but as a consequence it has redesigned the entire business model of firms and will change the balance of resources as well as opportunities and threats firms must face. A new challenging scenario is about to become the new arena in which firms must successfully compete. This already happened in all previous industrial revolutions following different paths, but what is new nowadays is the awareness that the Fourth Industrial Revolution will inevitably involve a change in society. Indeed, firms are rapidly introducing new technologies and tools; firms are the locus of innovation for society. Therefore, not only are firms continuously internally connected relying on completely automated and intelligent production, capable of communicating autonomously with the main corporate players, basing their business models on a new logic focused on innovation, technology and sustainability (Pan et al., 2015; Burritt, 2016; Piccarozzi et al., 2018). In this context, people are always connected and fully aware of their power towards firms and brands (Aquilani and Abbate, 2014a), while customers, on the other hand, desire to be involved in firm innovation processes and seek a part of the co-created value (Ramaswamy and Ozcan, 2014). Therefore, even if it is true that Industry 4.0 is based on new technologies (Prause, 2017, p. 423) in order to adapt to changing environments (Koether, 2006, p. 583), it is also true that environments change even more rapidly. In this context, individuals are asking firms to be even more involved in innovation processes (i.e., open innovation with customers, Aquilani and Abbate, 2014b) while desiring a “human-centered” society able to “balance economic advancement with the resolution of social problems by a system that highly integrates cyberspace and physical space” (i.e., Society 5.0) (http://www8.cao.go.jp/cstp/english/society5_0/index.html). In this sense, innovations introduced with Industry 4.0 can optimize people’s lives and social coexistence in the future, leading to the so-called “Society 5.0”,

Society 5.0 was proposed in the 5th Science and Technology Basic Plan as a future society that Japan should aspire to. It follows the hunting society (Society 1.0), agricultural society (Society 2.0), industrial society (Society 3.0), and information society (Society 4.0). This “social reform (innovation) in Society 5.0 will achieve a forward-looking society that breaks down the existing sense of stagnation, a society whose members have mutual respect for each other, transcending the generations, and a society in which each and every person can lead an active and enjoyable life” (https://www8.cao.go.jp/cstp/english/society5_0/index.html).

In the transition from Industry 4.0, which rapidly develops in firms and changes them from their very roots, to Society 5.0, open innovation processes play an important role, above all when leading to value co-creation.

Open innovation “assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology. Open innovation processes combine internal and

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external ideas into architectures and systems” (Chesbrough, 2006b, p. 2). Even if all open innovation processes - inbound, outbound and coupled (Enkel et al., 2009) - can involve individuals pertaining or not to firms and/or other institutions, only coupled interactive ones can lead to value co-creation (Piller and West, 2014; Aquilani, 2016).

Value co-creation is considered a “view start[ing] with interactions as the locus of value [where] platforms of engagements with individuals are the locus of value creation, and co-creative enterprises follow a single principle: they focus their entire organization on the engagements with individuals” (Leavy, 2014, p. 11). In this context, interactions are the locus of value (Leavy, 2014, p. 11). Each individual co-creates value related to all other individuals collaborating in co-creation processes and not just together and/or on behalf of the sole firm (Ind et al., 2013).

Given the above, it is clear that open innovation processes lead to value co-creation, so when the individual perspective is embraced (Aquilani, 2016), through a series of innovative tools, it can support the development of Society 5.0. Indeed, these same individuals involved in value co-creation processes with firms will bring new insights, new knowledge, new technologies and above all new and variegated experiences to society as a whole - i.e., value co-creation is about human experiences (Ramaswamy, 2011) -, nurturing it towards a human-centered society. In other words, if firms are the locus of innovation for societies, it can be said that they have already shifted towards a human-centered way to innovation and success. Indeed, individual firms already involved will be the first engine to start the shift of societies to Society 5.0, all this being enabled by ever new technologies developed by firms following individual desires and expectations.

Notwithstanding the tight links between Industry 4.0, open innovation, value co-creation and Society 5.0 no study has been carried out either on the links between Industry 4.0 and Society 5.0 or on the roles of open innovation and value co-creation in the transition from Industry 4.0 to Society 5.0. Thus, the firm contribution to this transition still remains unexplored.

Therefore, this study aims to start filling this gap in the literature, studying these relations following two main research questions:

1. Which are the most suited technologies to support the transition from Industry 4.0 to Society 5.0?
2. What role and how can open innovation processes leading to value co-creation support this transition?

Methodology. Based on a brief literature review of Industry 4.0 and its tools, Society 5.0 and value co-creation through open innovation coupled processes, this study proposes a conceptual framework to understand how these models and technologies can enable and support the transition from Industry 4.0 to Society 5.0.

Findings. Innovations introduced by Industry 4.0 lead to full automation and digitalization processes, as well as the use of electronics and information technologies (IT) in manufacturing and services in a private environment (Sommer et al., 2015). However, from literature it is clear that firms more often embrace an open innovation model to innovate and through even more sophisticated digital tools involve customers in these innovation processes (i.e., digital platforms; Boudreau, 2010). Considering that to have individuals remain involved, some benefits must be shared with them and so the value co-creation approach following a strategic perspective has emerged (i.e., Prahalad and Ramaswamy, 2004; Ramaswamy and Ozcan, 2014). Value co-creation considers the individual perspective, putting human experiences at its very core, they being the basis of value (Ramaswamy, 2011). Interactions among individuals in engagement platforms have almost a digital nature (i.e., forum, social websites, digital platforms; offline engagement platforms can be understood as focus groups but also temporary shops and call centers for example - i.e., Aquilani, 2016) and are the locus of value. Indeed, “people’s engagement experiences [...] generate insights to improve the nature of interactions as a result, including inside the enterprise. Interactions among people inside and outside the firm became the connective tissue where new insights, learning, and innovation were generated” (Ramaswamy and Gouillart, 2010a, p. 5). In this sense, it is clear that the key to success in co-creating value with individuals is to start and nurture these interactions.

However, interactions not necessarily remain within the firm but can continue outside its boundaries; individuals in fact can continue to interact and co-create value in various engagement platforms simultaneously; the latter can also be created by other individuals and not only by firms and/or institutions (i.e., communities) (Ramaswamy and Ozcan, 2014). All these engagement platforms linked together create the so-called experience domain. Specifically, “an experience domain is a stratum of individual involvement, events, contexts, and meaning, whose configuration of experiences embodies actualized outcomes in value creation. Experience domains span environments of interactions afforded by engagement platforms” (Ramaswamy and Ozcan, 2014, p. 53). However, it seems clear that the experience domain considered until now only from a firm perspective (Ramaswamy and Ozcan, 2014) cannot bridle individual experiences, by their nature at the same time diverse and universal (Ramaswamy, 2011), and their outcomes. Therefore, new insights, meanings and experiences will nurture the whole society in which the same individuals live, enabling the transition to a better society. A society in which “humans must remain central actors” and “digitalization is a means” (Fukuyama, 2017) and in which a high degree of convergence between cyberspace (virtual space) and physical space (real space) is achieved (Harayama, 2017).

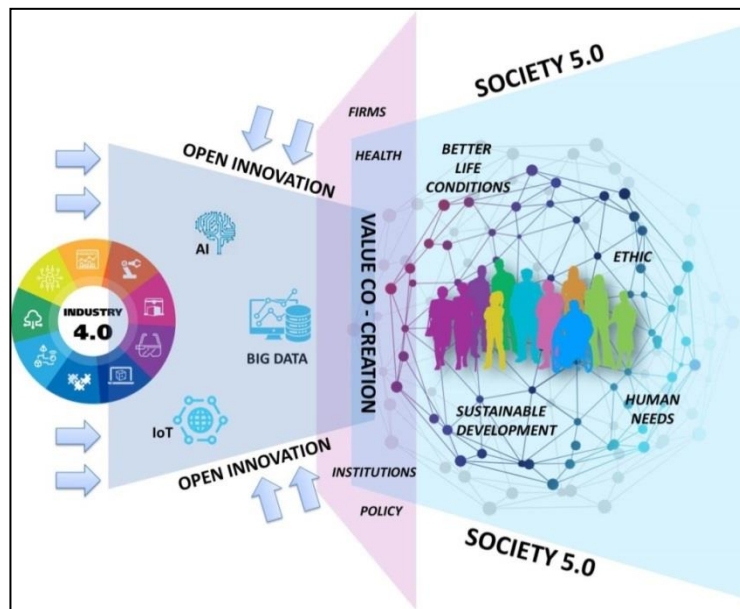
While in the past information society (Society 4.0), people would access a cloud service (databases) in cyberspace via the Internet and search for, retrieve, and analyze information or data, in Society 5.0, a huge amount of information from sensors in physical space is accumulated in cyberspace. In cyberspace, this Big Data is analyzed by Artificial Intelligence (AI), and the results are fed back to humans in physical space in various forms. Therefore, the common practice was to collect information via the network and have it analyzed by humans. In Society 5.0, however, people,

things, and systems are all connected in cyberspace and optimal results are obtained by AI; these results exceed the capabilities of humans and are fed back to physical space. This process brings new value to industry and society in ways not previously possible (https://www8.cao.go.jp/cstp/english/society5_0/index.html).

Given this, it can be stated that thanks to Industry 4.0 tools - i.e., Through Big Data (Kusiak, 2017) Internet of Things (IoT) (Schaffers et al., 2011; Santoro et al., 2018) and AI - it is possible to contribute to the shift to Society 5.0.

These insights provide a first picture of models and tools contributing to the transition from Industry 4.0 to Society 5.0, highlighting the role of value co-creation generated through open innovation processes. This paves the way to answering the two main research questions behind this study.

Fig. 1: Industry 4.0 to Society 5.0: first insights for a successful transition



Source: authors' elaboration

From figure 1 it can be seen that innovations such as IoT and AI, which are the operational tools to start efficient and effective open innovation processes, play a fundamental role in the business operating context. Sharing innovations, ideas, projects, etc. pass through the use and analysis of Big Data, which are essential for having all the background information that firms need.

Big Data combined with the use of technological tools - i.e., digital platforms - enables open innovation coupled processes, which give rise to value co-creation, but at the same time enhance human experiences of involved individuals who will then nurture the whole society with the same, progressively changing it towards a different model.

These first insights help in answering the two main research question behind this study.

1. Which are the most suited technologies to support the transition from Industry 4.0 to Society 5.0?
Among the various technologies of Industry 4.0, the fundamental ones for the transition to the new Society 5.0 can surely be found in the IoT and AI, which allow and support all information opening and sharing processes. These tools become essential to give life to open innovation processes more easily and rapidly and above all to those leading to value co-creation among all stakeholders (Schaffers et al., 2011; Santoro et al., 2018). Together with these tools, of course, Big Data becomes of paramount importance, while the role of digital platforms will probably grow, given that they allow interactions among individuals; their characteristics can enable more effective and rapid interactions.
2. What role and how can open innovation processes leading to value co-creation support this transition?
Value co-creation through open innovation interactive coupled processes can be considered the pillars supporting the transition from Industry 4.0 to Society 5.0.

Indeed, open innovation processes have already evolved starting from the inbound ones, the most studied and used ones (Chesbrough and Crowther, 2006; Schroll and Mild, 2011), to the outbound ones which are more profitable than the former (i.e., Michelino et al., 2014) and then to the coupled ones paving the way to value co-creation. This is a really different model from the closed innovation one, the only one known about fifteen years ago (Almirall et al., 2010; Chesbrough, 2006c). In this evolution, it is clear that new technologies and tools have been essential and will continue to play an ever more important role, but the real newness that value co-creation as well as Industry 4.0 and Society 5.0 have brought is the different approach to individuals in general and to the value they can all represent, both for firms and societies.

Indeed, the firm being the locus of innovation in societies, it is clear that open innovation has created the right fertile ground for the development of synergies and joint results as well as the fact that the value co-creation approach has made the role of individuals clear. Now it is clear that individuals cannot successfully act only on behalf of

innovation in firms but also in society in ever newer ways, given that they are linked twofold even more than in the past. Moreover, it can be said that through value co-creation processes new insights, ideas, etc. are exchanged between firms and society in new and more rapid ways, creating a virtuous circle between innovation in firms and better conditions of life in society; the real engine of this virtuous mechanism being individuals supported by technologies.

Indeed, this framework as well as the insights this study presents can be seen as a first step towards the comprehension of what firms can do in order to enable this transition, but also what benefits, opportunities and threats can come from it.

Research limits. The main limitation of the present research work is the lack of an empirical test of the theoretical model proposed through one or more case studies.

Practical implications. We expect to start systematizing the literature on open innovation, value co-creation and Industry 4.0, embracing a new approach focused on individuals desiring a better society while aware that technologies already used in firms can greatly help in building better societies. Moreover, putting together different streams of literature, not yet studied as a whole, would, hopefully, provide starting insights about firms as the engine to create better societies. Obviously, firms would seek to obtain benefits and new/different opportunities in respect to the past and should be aware that various and/or unknown threats can emerge and need to be managed and/or avoided. Therefore, we seek to understand what the drivers of future strategic decision-making processes will be and why some of them could emerge as essential instead of others, together with new and/or different trade-offs and challenges to be met. The envisaged framework will provide a wider and more comprehensive picture for managers about their opportunities and threats in a changing context. It would help to envisage a clearer link concerning all future challenges and be aware of their links and mutual relationships. Moreover, firms could better understand which individual needs and requests are more important, not only strictly related to their relationship with firms but at a more general level. This would enable firms to find new and/or different ways to co-create value with them in a “win-more win more” situation (Ramaswamy and Ozcan, 2014).

Originality of the study. This study proposes the first theoretical framework in order to understand how the transition from Industry 4.0 to Society 5.0 can be realized from a managerial point of view. In particular, it analyzes the contribution of value co-creation and open innovation in this transition, without forgetting the role of different tools made available by Industry 4.0.

Key words. Industry 4.0; Society 5.0; value co-creation; open innovation; Big Data; Internet of Things; Artificial Intelligence; sustainable development; human needs; better life conditions.

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