PICCOLA IMPRESA
SMALL BUSINESS

Rivista Piccola Impresa/Small Business

n. 1, anno 2023

Codice ISSN 0394-7947 - ISSNe 2421-5724

CIRCULAR ECONOMY INNOVATION AND COVID-19 STRATEGIES IN START-UPS FOR MORE SUSTAINABLE, HUMANE AND RESILIENT ENTREPRENEURSHIP

Patrizia Ghisellini
University of Naples Parthenope
patrizia.ghisellini@uniparthenope.it

Ivana Quinto
University of Naples Parthenope
ivana.quinto@uniparthenope.it

Renato Passaro
University of Naples Parthenope
renato.passaro@uniparthenope.it

Sergio Ulgiati
University of Naples Parthenope
sergio.ulgiati@gmail.com

Article info

Date of receipt: *18/04/2022*
Acceptance date: *31/03/2023*

Keywords: *Circular economy, Circular start-up, Sustainability, Humane entrepreneurship, COVID-19.*

doi: *10.14596/pisb.3385*

Abstract

Purpose. *The Coronavirus Pandemic has further shown the huge limits of the dominant model underpinning the global economy and society triggering the urgent need to revisit its foundations and unsustainable patterns. In this challenging context, Small and Medium Enterprises (SMEs), as well as innovative circular start-ups are redesigning their business models in which the care of people, the environment and society assumes a key role.*
Design/methodology/approach. *This paper investigates through a multiple case study approach the business models of three recently founded circular start-ups with the main goal of understanding their entrepreneurial motivation, visions, sustainable and human entrepreneurship orientation. In that, we explore how they are contributing to achieve a more inclusive, human-centred, and environmentally friendly society.*
Findings. *The three case studies analysed show how circular start-ups, by focusing on designing more innovative products and processes for by-products or waste valorisation have created new forms of entrepreneurships also able to generate positive social impacts other than environmental and economic ones.*
Practical and social implications. *The results show that environmentally sustainable and socially innovative models could better support firms to tackle critical events, such as COVID-19 disease, by improving their own resilience and competitiveness and ability to properly respond to such difficult situations.*
Originality of the study. *This study attempts to shed further light on circular start-up companies, their features and business models. The international literature shows that circular start-up currently seems much suitable of adopting disruptive circular strategies and the needed cultural and ethical advancements for the Circular Economy (CE) transition. Their innovative approach could be a strong catalyst for large incumbents stimulating them to develop circular business model innovations.*

1. Introduction

The Coronavirus Pandemic has shown the huge limits of the dominant model underpinning the global economy and society surging the need for revisiting its foundations (Dana et al., 2021; Ghisellini et al., 2021a; Zamagni, 2016). The recovery of the global economies including the Italian one has made been possible by the State intervention (Gerbaudo, 2021) as well as the involvement of all the actors of the civil society, including entrepreneurs (Muñoz and Cohen, 2017).

Case studies show that entrepreneurs and small organizations (small companies, social enterprises, start-ups) adapted to the challenges of the Pandemic as well as contributed to the recovery of the local economy and society (Bacq and Lumpkin, 2020; Ceraulo, 2021; Fioravante et al., 2021; Ghisellini et al., 2021; Sentuti and Cesaroni, 2021). This evidences the relevance of implementing new models of enterprise that integrate the needs of internal and external stakeholders (Fioravante et al., 2021; Jakobsen et al., 2017; Uelmen and Bruni, 2006; Borzaga and Tallarini, 2021) in order to improve the wellbeing of the society (Padilla-Rivera et al., 2020) and its resilience towards such shocks (Pal et al., 2014).

In this view, Humane entrepreneurship (HE) has emerged in the last years in response to the growing demand of new approaches and visions of enterprise that search for a profitable business and are sensitive to the current environmental and social challenges (Parente et al., 2020). HE is conceived as a theoretical and practical framework that fits with the three bottom line model of sustainability (Elkington, 1994) and the United Nations 2030 Agenda and its 17 Sustainable Development Goals (SDGs) (Parente et al., 2020).

Furthermore, the CE model is also receiving a growing consensus from enterprises and its principles (e.g. reduce, repair, reuse, remanufacture, recycle) (Murmura et al., 2019; Merli and Preziosi, 2018) are currently increasingly being applied reflecting they are willing to innovate their activities and conventional models in particular to reduce their contribution to the current environmental crisis (IPCC, 2021).

Moreover, the circular business models adopted by start-ups are attracting the interest of the international research (Henry et al., 2020; 2022) by opening new opportunities for their explorations (Suchek et al., 2022). Circular start-ups (CSUs) are particular meaningful in the early stage of the transition to CE (Van Langen et al., 2021) as they are currently adopting disruptive circular strategies (Henry et al., 2020) that are crucial for their spillover effects in reverse supply chains to advance CE in large incumbents (Ciccullo et al., 2022; Veleva et al., 2018) and, in general, in the private sector (Henry et al., 2022). Their motivations of addressing environmental problems at global and local level (De Angelis and Feola, 2020) are crucial

for providing responses to environmental challenges and for intercepting market limitations (Rok and Kulik, 2020). To the best of our knowledge only some articles analysed Italian CSUs business models (Coppola et al., 2023; Ciccullo et al., 2022) and no one integrated the concepts of HE in circular business models of start-ups. Further, a few studies have measured HE in SMEs (Debicka et al., 2022; Le, 2022).

Therefore, this paper investigates the business models of a sample of Italian CSUs with the main goal of understanding the main drivers behind their entrepreneurial idea and vision, the features of their business models, the integration of the three pillars of sustainability, their HE orientation and the impacts of COVID-19 in their activities.

Therefore, in this study, our research questions are the following:

1. What factors (environmental and social) triggered CSUs entrepreneurial idea and characterise their visions?
2. How do start-ups implement CE principles (e.g. reduction, repair, reuse, remanufacturing, recycling)?
3. How do they integrate the three pillars of sustainable development in their decisions?
4. How do they integrate the human entrepreneurship orientation towards employees and local community?
5. How did the COVID-19 Pandemic impact on the CSU's activities?

To match its aims, this study is organized as in the following. Section 2 provides a review of the literature evaluating circular business models, Human entrepreneurship theoretical framework, the effects of the COVID-19 pandemic on entrepreneurial activities and CSUs while section 3 describes the method adopted in this study. Section 4 presents the results. These latter are discussed in section 5 while the main conclusions are presented in section 6 along with the implications of the results of the study.

2. Literature Review

2.1 Circular start-ups and business models

The concept of business model is crucial for enterprises as it expresses the way of doing their business and creating, delivering and capturing value for all stakeholders (De Keyser and Mathijs, 2023; Bocken et al., 2016).

Worldwide, the CE is still at the early stage of implementation (Bosman and Rotmans, 2016; Kirchherr and Van Santen, 2019). The business models of enterprises in some relevant economic sectors (such as energy, transportation, food, construction, clothing and textile, technology, retail, advertising and media) are considered unsustainable and their transfor-

mation is needed by means of different strategies including the adoption of CE (Bocken and Short, 2021). Therefore, even if circular business models represent a challenge for an enterprise, due to the involved changes they require (Pieroni et al., 2019), they should be adopted to improve the sustainability of their consolidated business models (De Keyser and Mathijs, 2023) and maintain their competitiveness now and in the future (World Economic Forum, 2022).

Circular business models suggest the closing of material loops, the increase of resource efficiency or the extension of their value over more than a life cycle (Bocken et al., 2021).

Henry et al., (2020) identified in a sample of 128 international CSUs five dominant circular business models namely design-based, waste-based, platform-based, service-based (e.g., energy as a service), and regenerative/nature-based business models. Further, Henry et al., (2022) extended the analysis to understand the motivations of the founders of the CSUs behind their decision to create a new venture as well as their entrepreneurial visions and missions. These aspects are crucial for shedding light on bottom-up initiatives in CE transition and understand their potential. Currently CSUs mainly born to address environmental issues rather than for social altruism (Henry et al., 2022) and only in some cases do they simultaneously perceive all three sustainability pillars (De Keyser and Mathijs, 2023). However, the literature also presents case studies where CSUs try to maximize their positive impacts and harmoniously combining the environmental and social pillars with the achievement of their profits (Rok and Kulik, 2020). Finally, it is also stressed the importance that CE implementation in society is integrated by the concept of "sufficiency" to tackle the excessive levels of material consumption in production and consumption. In a sufficiency-based society, everyone should have enough for a good life with more equality and fairness across society and environment where the societal actors have changed their short-term "*view with a longer perspective and developed an essential collective sense of commitment and responsibility*" (Bocken and Short, 2020).

2.2 Human entrepreneurship

Human entrepreneurship (HE) has been defined by the combination of three components: entrepreneurial orientation, sustainable orientation and human resource orientation (Parente et al., 2020; Kim et al., 2018). HE is based on "*a new way of identifying and exploiting entrepreneurial opportunities through the active involvement of people inside and outside organizational boundaries*". In that, Parente et al., (2018) suggest that: *employees be inspired and supported in enhancing their talents in the service of an entrepreneurial project. On a wider external level, the ability for entrepreneurs to build consensus, in their*

own communities of reference, is relevant to the definition of strategic entrepreneurial postures". To reach this consensus the traditional vision of entrepreneurship, which has a logic oriented towards business and exploitation of opportunities, should be enhanced by adding a human-centred logic, i.e., human entrepreneurship (Bae et al 2018; Kim et al 2016). As a result, from a resource-point of view, HE orientation is considered as a firm-specific resource that is "*unique, inimitable, uncopiable and irreplaceable*" (Tiep Le, 2022) and contribute to achieve the idea of enterprise as a project rather than "*a machine for making money*" suggested by the scholars of civil economy (Bruni and Zamagni, 2015). In this perspective, the enterprises is a social institution besides being an economic actor that suggests "*corporate social responsibility as a form of justice instead of philanthropy"* (Amaeshi, Nnodim and Osuji, 2012).

Finally, HE is also a framework that potentially could create synergies with circular entrepreneurship since the motivation and identities of circular entrepreneurs are influenced and moved by the triple bottom line orientation (Henry et al., 2022; Rok and Kulik, 2020).

2.3 Circular start-ups and COVID-19 pandemic

In the early 2020, the World Health Organization (WHO) stated that COVID-19 was a world health emergency. The quick and disrupting spread of the virus across countries has produced dreadful impacts on most economic and social activities (Kurita and Managi, 2020; Katafuchi et al., 2021). In order to reduce the transmission of the COVID-19 across the population, the national Governments have adopted numerous and diverse measures, such as social distancing, home quarantine, school closures, and case isolation (Yoo and Managi, 2021). All these policies have caused social and economic shocks in the short-term and growing concerns exist about the long-term effects on household income, consumption (Kim et al., 2018; Martin et al., 2020), economic growth, innovation and entrepreneurial processes (Kurita & Managi, 2020).

In this context, firms and innovative start-ups adapted and further innovated their business models (Guckenbieehl and de Zubielqui, 2022) and outlined new strategies and approaches that fit the new situation (McIver-Harris & Tatum, 2021;). Among these, the adoption of more sustainable and humanistic business models has the potential to boost start-ups to react more effectively to the current sanitary crisis (Uelmen and Bruni, 2006; Jakobsen et al., 2017) and the changing needs of their employees, customers and other stakeholders (Debicka et al., 2022). Generally, the specific features of innovative start-ups should enable them to better cope with the COVID-19 crisis than other firms. Indeed, being innovative can be considered as a precondition of the resilience, as innovative firms should continuously

anticipate and face new trends and/or shocks (Linnenluecke, 2017). Additionally, some very recent studies are showing that circular firms are more resilient than non-circular firms to both period of crisis as well as normal times, as they reduce the use of scarce natural resources (Borms et al., 2023). This can be singled out as a reason why the emergence of the pandemic has drawn the attention to CE as a driver for a higher sustainability (Wuyts et al., 2020). This confirms that the pandemic has stimulated the attention and forced businesses to innovate their business models and culture towards entrepreneurial values encompassing strong sustainability (Cohen, 2020) and humanistic concerns such as solidarity, empathy, equity, and fairness (Del Baldo and Baldarelli, 2019; Molteni, 2009; Nigri et al., 2020).

3. Approach/Method

This section deals with the method adopted in this research to achieve our goals. It is organized in two subsections: research design and sample selection, Interview protocol and data analysis.

3.1 Research design and sample selection

This study adopts a multi-case study approach (Eisenhardt, 1989) consisting in the analysis and comparison of the activities of a group of CSUs. The choice of case study analysis approach, appears to be coherent with previous recent studies analysing the adoption of CE principles and business models of small (e.g., De Angelis and Feola, 2020; Rok and Kulik, 2020) and larger samples of circular start-ups (Henry et al., 2020) and their contribution in perceiving the three pillars of sustainable development (Rok and Kullik, 2020).

This research was designed to collect primary data by means of qualitative interviews face to face (Brinkmann, 2013) and secondary data retrieved from the Atlas of the Circular Economy and in particular from the websites of the selected start-ups.

Before the selection of the sample a literature review was conducted in the emerging field of research of CSUs to identify the main investigated themes as well as the theoretical base where frame the results of this study (Henry et al., 2022).

An initial group consisting of seven CSUs has been built by means of a search in the Atlas of the Circular Economy. The latter platform, in particular, includes many secondary data on the organizations (including start-ups) transitioning to the CE. For each organization, the Atlas dedicate a web page showing how the organization is experimenting the CE, the features of its products/services and its environmental and social policies. Moreover, as evidenced above, further information about the group of the

start-ups was retrieved from their web sites.

After the selection of the seven CSUs, researchers of the group analysed them separately in order to synthesise the firm history and mission and identify the CE business models adopted.

The CSUs have been later contacted by email to ask them to participate to the face-to-face interviews, but only 3 out of 7 provided a positive answer. Notwithstanding, the participation of only these three start-ups- is coherent with Patton's (1990) recommendation about the relevance to select information-rich cases for facilitating in-depth understanding of the topics of interest.

The selected three Italian circular start-ups are distributed in different economic sectors responsible of relevant environmental impacts (e.g. in terms of water consumption, greenhouse gas emissions, waste generation) in the life cycle of products, such as textile/fashion, construction and food supply chain. These three economic sectors have been identified as key product value chains in the Circular Economy Action Plan of the European Union requiring the adoption of urgent, comprehensive and coordinated actions to reduce effectively their environmental impacts (European Commission, 2020).

3.2 Interview protocol and data analysis

Interviews face to face with the founders of the three start-ups (Rifò, Prespaglia, Packtin) were made by at least two members of the research team on the basis of an interview protocol that was developed according to literature (Gibbert et al., 2008).

A list of questions for the interviews was defined on the basis of the literature and in particular: Henry et al., 2020; 2022; Rok and Kullik, 2020; Dębicka et al., 2021; Parente et al., 2020.

Before starting the interviews, the founders of the three CSUs received an information sheet and a consent form where they were informed about the motivations behind their selection, their rights as participants to an interview, how the information collected during the interview will have been handled and further elaborated.

The interviews lasted about 1 hour and have been conducted by means of the most available on-line platforms or by phone. They have been always audio-recorded after receiving the consent of the interviewees. Some notes have also been taken by the members of the research group.

The interviews took place in the period between November 2021 and March 2022. The list of questions used is available in the Appendix. After the interviews, the data collected (both recorded interviews and personal notes of team members) have been transcribed in the form of reports and analysed by the research team members.

A coding procedure was adopted to analyse and process the data collected in the interviews. Table 1 reports how the data have been processed

starting from some exemplary quotes and aggregating them into second order categories. Both the categories of first order and second order code have been selected on the basis of the literature cited accurately in Table 1.

Finally, the main steps of the research method adopted in this study are summarised in Table 2.

Tab. 1: Coding procedure from interviews excerpts to aggregations in theoretical concepts and definitions.

Interview quotes	1st order code	Reference/ definitions 1st order code	2nd order codes (Aggregate dimensions)
"The creation of a sustainable brand was born during a journey in Vietnam when I became aware of the huge problems of overproduction and overconsumption in the fashion industry" (Rifò); "The idea of our start-up emerged from the desire of apply in practice the biorefinery concept that was largely investigated in research and valorise food by-products considering them resources than waste" (Packtin);	Biospheric altruism	Henry et al., 2022 "*Motivation based on a pro-environmental attitude addressing nonhuman species*"	Entrepreneurial Motivation/idea (Henry et al., 2022)
"Innovate conventional building products manufacturing them in a more sustainable manner with bio-based products of high quality that guarantee the good health and wellbeing of our clients in their buildings" (Prespaglia)	Social altruism	Henry et al., 2022 "*Motivation to enhance the well-being of others*"	
"The way in which we have produced, consumed and conceived clothing is no longer sustainable. This is why we need a revolution" ….." We are against programmed obsolescence, especially in the fashion industry" (Rifò). "I would like to be more involved in the improvement of the wellbeing of the local community and consciousness in construction about the use of materials of high quality and that comply with the principles of CE" (Prespaglia)	Inspire/ teach circular consumption	*Bocken and Short, 2020: "consumption-orientated society based, not only on circular economy, but on sufficiency".* Henry et al., 2022: "*Influence consumers or markets by raising awareness and role modelling circular mindsets/ practices*"	Entrepreneurial identity (vision/ objectives and business environment interaction) (Henry et al., 2022)
"From the beginning one of our brand cornerstones has been our supplier's transparency, one of our fundamental values" (Rifò). "We decided to create a new social impact project, a school for cenciaiolis for people coming from the migrant's local reception centres" (Rifò).	Social Impact	Henry et al., 2022 "*Striving for social equity along the supply chain, impact on social structures or (marginal) societal groups*"	

"The circular design has a key role for our start-up since our garments are designed to be more durable in their whole life cycle…." (Rifò). "Our products are designed with materials that are mixed in a natural way without the adoption of heat and energy, thus reducing strongly CO_2 emissions in the production processes". (Prespaglia)	Design-based model	Henry et al., 2020:" *Design-based start-ups adopt circular innovations mostly in the pre-market phase of their product or service through source material minimization, product design or production process efficiency".*	Circular business model application (Henry et al., 2020)
"The core activity of Packtin encompasses a set of processes that at cascade gives an increasing value to by-products of the regional agri-food industry (Emilia Romagna Region).".	Waste-based model	Henry et al., 2020: *"Waste-based CSUs seek to extract value from unexploited external waste streams (e.g. recycled plastic, CO_2, surplus food) mostly based on innovative process solutions"*	
"Sustainability means the minimization of the environmental impacts of our products and processes" (Prespaglia) "The pilot plant that we are developing for waste valorisation is also designed to recycle the water and other by-products that it generates" (Packtin). "Today it is necessary to reuse and recycle for the respect of the Planet and for achieving a long-term sustainability and resilience" (Rifò).	Equilibrium among the three pillars	Elkington, 1999 "social justice, economic prosperity and environmental quality" three key elements of the triple bottom line" vision of founders of CSU as ecopreneurs – inner goal of changing the world for the better. "*The economic benefits of succeeding in business are perceived in parallel.* (Rok and Kulik, 2020)".	Sustainable orientation Rok and Kulik, 2020)

Not investigated in the interviews	Empowerment	Dębicka et al., 2021	Human entrepreneurship orientation (in terms of variables to be studied: Dębicka et al., 2021)
Not investigated in the interviews	Ethics	Dębicka et al., 2021	
"The artisans who collaborate with Rifò share our values. We ask them to sign a code of conduct, by which they also undertake to respect the 4 principles of the International Labour Organization (ILO): Freedom of association; No forced labour; No child labour; No employment discrimination	Equality	Dębicka et al., 2021	
"We pay a great attention to develop a very inclusive, participative and collaborative organizational culture and climate" (Rifò)	Employees Engagement	Dębicka et al., 2021	
"Our technology and plant should be implemented in close proximity of the agri-food industries generating in this way a virtuous relationship with the local community, not only in economic terms but especially in social ones" (Packtin). "I would like to be more involved in the improvement of the wellbeing of the local community by improving the awareness about the importance of the use of high quality products in buildings" (Prespaglia) "We finance several solidarity projects in order to give something back to the local community where our company located" (Rifò).	Ecosystem/ local community involvement and development	Dębicka et al., 2021; ISO 26000, Social responsibility	

Table 2: Description of the main steps of the research methods adopted in this study

Step 1. Identification of the general objectives of the research (analysis and comparison of the activities of a group of CSUs) and the methods for data collection of the case studies (qualitative interviews and secondary data from interviewees' websites);
Step 2. Literature review for identifying the main researched themes in CSUs research and the theoretical base for the results of the study;
Step 3. Identification of an initial groups of seven CSU by means of a search in the Atlas of the circular economy;
Step 4. Analysis of secondary data of the seven CSUs. Contacted Founders of the CSU to invite them to interview face to face. Reception of the consent to participate to the interviews from 3 CSU;
Step 5. Definition of the list of questions for the interviews on the basis of the reviewed literature;
Step 6. Interviews preparation by sending the information sheet and a consent form to the participants;
Step 7. Conduction of the interviews by the research team members;
Step 8. Analysis of the data collected (both recorded interviews and personal notes of team members) and transcription in the form of reports. Further processing of the data and their aggregation into identified first order variables and aggregate dimensions.

4. Results

This section deals with the presentation of the results about the analysis of the preliminary data collected via Internet websites of the start-ups as well as of the data from the interviews. It starts to describe the stories of the three start-ups and proceeding with the description of their circular production models in the other sections. Table 3 shows specific information about each interviewed CSU.

Tab. 3: Main information about circular start-ups interviewed.

	Rifò	**Prespaglia**	**Packtin**
Foundation date	2017	2017	2017
Members (educational skills)	Two co-founders, an intern and 11 employees. The founder has a degree in International Economics while his colleague has a high school diploma as an expert in textile sector.	The Founder, his son and five employees. The founder is a surveyor and has a long experience in the building sector.	Three co-founders and two employees. The three founders have a PhD in Agricultural Science and Technologies while the two employees a degree in Economics and Law.
Location	Prato (Tuscany Region)	Modugno (Apulia Region)	Reggio Emilia (Emilia-Romagna Region)
Mission	Design and creation of an ethical fashion that is versatile, qualitative and unique reversing thoroughly the concept of fast fashion.	Design and innovate conventional building products and technologies with products designed and manufactured in a more sustainable manner.	Reduction of the amount of food by-products by recovering them in a cascade of multiple uses to maximize their value into appropriate recovery options and products.

4.1 The selected circular start-ups and their stories

4.1.1 Rifò

This start-up is leading in the fashion sector and has been created thanks to the project idea of one of the co-founders in the year 2017. The name of this start-up, "Rifò" (originated from the verb "to redo") has been chosen by the co-founders as it reflects the spirit of Tuscany people and the way of speaking of the artisans who invented, more than a hundred years ago, the method of regenerating old garments to produce a new yarn: the so-called "Cenciaioli". Furthermore, "Rifò" aligns with their will of doing and continuing a traditional craft that has been disappearing in recent years.

"Rifò" moved officially in the year 2018, from an idea of one of the co-founders to a venture located in Prato (central Italy) with a social aim after joining the "Hubble" acceleration program at the Nana Bianca accelerator in Florence, with the support of Research and Development Foundation and Fondazione Cassa di Risparmio di Firenze. The idea underlying the creation of "Rifò" was concepted outside of Italy, in Vietnam, where one of the co-founders, in a journey in that country, become aware of the huge problems coming from the overproduction and overconsumption in fashion industry.

The team of the start-up is currently composed by the co-founders and several employees with different ages and skills (ranging from fashion designers to product developers and communication specialists).

4.1.2 "Prespaglia"

The start-up has been created in the year 2017 by the founder after several years of research and work experience for big companies in the field of bioconstruction. The huge research work of the founder was aimed to the creation of more sustainable products and consisted also in the preparation of innovative prototypes.

In the interview the founder evidence that the idea of designing and producing innovative building products was born during a conference on the energy efficiency and use in buildings including presentation of cases of zero energy buildings.

These aspects are at the core of the current mission of the start-up that aims to innovate conventional building products and technologies with products designed and manufactured in a more sustainable manner. So far, Prespaglia have designed and patented a wide range of products having straw as a common ingredient. It is the flagship of their model of eco-sustainability based on circular economy principles.

The team of the start-up consists of the founder and his son as well as

of five workers and a secretary. The description of the team by the founder is particularly passionate towards one of the workers due to his high skills and dedication to the job. Indeed, such dedication and passion is expressed in the products that are defined by the worker as his creatures.

4.1.3 Packtin

Packtin has been founded in 2017 from a spin-off of the University of Modena and Reggio Emilia. The team of the start-up is composed of five members (three co-founders and two employees) who have all a high level of education. The creation of the start-up can be considered as an evolution of the research projects of the three co-founders performed during and after the PhD.

Since its foundation, the mission of Packtin has been contributing to the reduction of the negative effects of the linear model of industrial production in agri-food sector. In the interview, one of the co-founders pointed out that the production of a good in agri-food sector, in the linear production model, considers as waste all the by-products generated during the production process and that are not incorporated in the final good. In such perspective, all the by-products should be treated as waste leading to high environmental, social and economic costs. This problem is as much as relevant in Emilia Romagna Region, where the start-up is located, that is one of the leading Regions in Italy and at the global level in agri-food industry. Accordingly, taking into account this huge problem, the team reflected on how to transform the by-products into an opportunity. In this view Packtin started to design a process of recovery and valorisation of some type of by-products in order to produce new goods with an increasing value.

4.2 How do start-ups implement the principles of CE?

This section describes in detail how the selected start-ups are applying the principles of the CE *(reduction, repair, reuse, remanufacturing, recycling)* in order to understand better why they can be defined as circular born start-up. They adopt one or more than one of the CE principles. "Rifò" mainly applies the reuse and recycling principles but has a strong focus on product design. In the same perspective, follows "Prespaglia" which production model is also highly centred on product design and in the production of biomaterials for construction industry made of straw from wheat cultivated in the surroundings of the company by local farmers. The third start-up, "Packtin" recycles by-products coming from the regional agri-food industry, at cascade, in so providing with the opportunity of maximizing the value of the by-products.

4.2.1 Rifò circular production model

Rifò can be considered a CSU as its missions is producing new clothes from regenerated yarns (e.g., cashmere, wool and cotton for jeans), which are, in turn, easily and entirely recyclable. In other words, as claimed by the Founder, "*Rifò is able to create a regenerated and regenerable clothing line at zero miles in Prato*". Moreover, "*the circular design has a key role for our start-up since our garments are designed to be more durable in their whole life cycle and at the end-of-life they can be easily disassembled in order to return as quickly as possible into a new production cycle. The complete recycling of clothes is possible as we try to use the same fibre for each component of the garments (e.g. stitching) and avoid too much inlays*".

The raw materials used by Rifò are regenerated yarns/fibres of different types. The yarns are used for the production of their garments, that are designed internally, while weaved by artisans located in close proximity (lower than 30 km) of the company. This assures a constant relationship of the company with its suppliers which activities also need to be certified by international certification standards. It is important to highlight that the recycling of textile fibres is possible when the garments are 95-100% composed of a single material, be it virgin or recycled. A virgin cashmere fibre can be recycled up to about 5 times whereas jeans cotton up to 3 times. So, the choice of consumers towards the purchase of cotton or wool garments that do not have large amounts of synthetic materials assures more opportunities of being recycled at the end-of-life.

Rifò underlines that regenerated yarns, have shorter fibres compared to virgin ones. As a result, the yarn composition includes a very small amount of virgin fibres (e.g. 20% for regenerated cotton and jeans, and 5% for Cashmere) needed to strengthen the structure of the fabrics and knitwear in order to support the tensions of the production process. The goal of Rifò would be to collect as much as possible old garments and regenerate them into a new cycle in order to create a closed cycle with a zero-net impact. Most of the regenerated materials comes from collected post-consumers clothes (66%) compared to pre-consumers ones (industrial leftovers). Only the recycled cotton derives from pre-consumers sources due to the scarcity of post-consumers products to regenerate. Unfortunately, most often the latter have a mixed composition of cotton and synthetic. The cashmere regenerated mainly origin from clothes coming from North America whereas the regenerated jeans come from European jeans (mainly southern Europe). The collection of the waste clothes occurs from their web portal where they receive clothes made of 100% wool and 100% cashmere. Another source of collection is the project "Rethink your Jeans" by which they collect old jeans composed at least by 95% cotton. In 2020, Rifò recycled about 200 cashmere sweaters and 272 jeans. From these it has been possible

to obtain about 67 kg of cashmere and 150 kg of jeans respectively.

The founder in the interview underlines that the production processes of regenerating yarns generate a small amount of waste that is all recycled internally. Rifò aims to be a sustainable brand and be transparent by revealing the impacts of its activities. Rifò is aware of its limits but aims to face daily challenges with a parallel approach of continuous improvement.

4.2.2 Prespaglia circular production model

The production process of this start-up leading in bio-construction sector is highly centred on bio-based materials and in particular on straw. The latter is included in many of its products from the eco-blocks for external cladding to the architraves until panels for thermal coatings. Straw, is one of the oldest and most used building materials due to its recyclability and incredible natural and performing properties. Moreover, it is easily locally available due to the vocation of Apulia Region in agriculture.

The main feature of straw is its high thermal insulating and sound-absorbing properties, which are essential for creating soundproof and relaxing building environments. The bricks made of straw also contribute to construct solid and long-lasting buildings thanks to the mechanical resistance of straw which has also excellent anti-seismic properties. The interview with the founder reveals that they also have patented recently a structural brick made with bamboo cane. The use of this material provides with the opportunity of lightening the building structure in reinforced concrete.

The bio-construction products by Prespaglia (from bricks to external coating) are also made of expanded clay that is an important material which has the feature of removing the excessive level of humidity in so assuring the optimal microclimate inside the building. Moreover, the glue to attach the materials and plasters are made of straw dust (which is a very resistant thermos plaster) as well as of hydraulic lime and white cement. These materials make it possible to eliminate thermal bridges, helping to provide a planetary compensation of the masonry. Interestingly, the founder during in the interview evidence that "*the materials contained in Prespaglia products are mixed in a natural way without the adoption of heat and energy, thus reducing strongly CO_2 emissions in the production processes*".

The case study of Prespaglia reveals that the founder conducts this activity with a strong passion deriving from a massive motivation towards environmental protection which has resulted from the very beginning of the development of the business idea in the search for appropriate solutions for bio-construction materials. In truth, it should be noted that the technical know-how that the founder has accumulated over years of work in the conventional building sector also played an important role. In this view, it is worth pointing out that all Prespaglia products are the result

of many years of research and a lot of experience in the construction and renovation of buildings.

The quality of the products has also been proved by thermal tests and other tests. The start-up also aims to obtain the Environmental Product Declaration (EPD) for its products and is performing a Life Cycle Assessment (LCA) study for some of the products since it is required by the EPD certification. Finally, the environmental efforts of the start-up are also reflected in the project for installing a photovoltaic plant on the roof of the facility of the start-up rendering the latter self-sufficient in energy terms. In this way, the start-up adds a further component in its circular production model.

4.2.3 Packtin circular production model

The core activity of Packtin encompasses a set of processes that at cascade gives an increasing value to by-products of the regional agri-food industry (Emilia Romagna Region). Some of the by-products recovered and valorised by the start-up include orange peels as well as tomato peels and seeds. In the interview, one of the founders explains in details the process of valorisation of the by-products. The process is made up of two subprocesses (stabilization and extraction) from each of which specific products are obtained.

The Stabilization of the by-product is performed by means of the creation of a process of exsiccation at low temperatures. The stabilization is needed due to the fact that by-products are fresh and easily perishable and is also important to maintain their flavour and antioxidants. From the process of exsiccation, Packtin obtains the first product that is a flour that can be put on the market and given that it is rich of antioxidants can be used as an ingredient for bakery products or other food products.

The extraction decomposes the by-products in its main fractions such as sugar, vitamins, antioxidants. This gives an added value compared to the conventional flour. The founder underlines that their process is designed as an innovative process of extraction that minimizes the consumption of water. At the end of the extraction process, further products in the form of fibres are obtained that can be used as coatings and are similar to plastic as a material. The founder explained that their business project in developing the technology for the valorisation of agri-food by products (by means of the processes of stabilization and extraction) implies the production of a pilot plant as the required technology to recover the agri-food by-products and, the validation in the: supply chain, technology and market.

After the three types of validations, Packtin considers that the optimal plant should treat a quantity of about 50-100 tonnes of by-products per day, that is a much higher size compared to the one of the pilot plants. In that, such size is also in agreement with the local model of circular economy and

its environmental sustainability in terms of a distance of about 50-100 km from the companies that generate the by-products. Beyond such distance it would be more economically and environmentally convenient to create plants in other areas closer to the production sites of the by-products to avoid excessive transports costs. Moreover, the start-up is also considering to what extent all the processes (stabilisation and extraction) should be performed by Packtin or some should be outsourced.

4.3 How the start-ups integrate the three pillars of sustainable development in their decisions?

With regard to sustainability and its three pillars, one of the questions in the interviews to the start-up was aimed to understand qualitatively their environmental and social awareness and which role have in particular the environmental pillar in their decisions. The three founders/co-founders highlighted that the economic dimension has certainly a relevant role. However, the environmental pillar is intrinsically linked to the economic pillar and is constantly taken into account being part of their core process and products. As a matter of fact, sustainability means for Prespaglia, the minimization of the environmental impacts of their products and processes and also rely on bio-based input of high quality that guarantee the good health and wellbeing of their clients in their buildings. Their products are also certified by the certification scheme ANAB-ICEA that is specific for the bio-construction. ICEA certifies in agree with the standards by the ANAB (National Association of Bioecological Architecture) the bioconstruction materials having a low environmental impact.

The Founder of Packtin e.g., explained that their environmental awareness can be better understood thanks to the fact that their pilot plant is also designed to recycle the water and other by-products that it generates. Moreover, Packtin aims to maximize to the possible extent the value that can be obtained from the agri-food by-products they use as input for their plant. Not to mention that the foundation of their start-up aims to contribute to tackle the high amount of food wastage in agri-food industry.

The founder of Rifò claimed that, the main driver of their business is the environmental protection and safeguard. In the past it was cheap to recycle, but today it is necessary for the respect of the Planet and for achieving a long-term sustainability and resilience. Environmental, social and economic aspects are strongly interconnected and reinforce each other.

4.4 How is the human entrepreneurship orientation of the start-ups towards employees and local community?

The interviews confirmed a different inclination of the start-ups about the inclusion of human and social aspects already resulted by the analysis of their web sites and other secondary sources. However, despite these differences the three start-ups have in common a link with the territory where they are located and from the interviews result their willingness to maintain their local identity and contribute as actors to its sustainable development and a better natural environment. In that, e.g., the Founder of Packtin stated that "*our technology and plant should be implemented in close proximity of the agrifood industries generating in this way a virtuous relationship with the local community, not only in economic terms but especially in social ones*". In a similar manner, the founder of Prespaglia claimed that "*I would like to be more involved in the improvement of the wellbeing of the local community and contribute to the dissemination of the importance of e.g., the Eco-bonus in incentivizing the use of building materials of high quality and that comply with the principles of CE".* Rifò takes a particular care to all the stakeholders involved in its activity from the employees, to suppliers and local community. Its website includes a section dedicated to the description of each one of the employees and their skills, interests, education and sensibility. Rifò also have a sustainability report - highlighting the efforts in integrating the human and social aspects in the enterprise' activity. As stated by the Founder, "*the involvement of the employees in the activities of the company is constant and there is a continuous contact assured by weekly and months meetings between employees and founders so to guarantee the diffusion of our organization culture based on sustainability values. We pay a great attention to develop a very inclusive, participative and collaborative organizational culture and climate".*

The Founder of Rifò also evidenced their goals of maintaining a positive impact in the territory by providing job opportunities to local artisans sharing with them relationships based on human values. Rifò also collaborate and finance several solidarity projects in order to give something back to the local community where the company was born and currently located.

4.5 How the COVID-19 Pandemic impacted on the circular start-up's activities?

The COVID-19 Pandemic has influenced to a different extent the activities of the three start-ups depending e.g., on the consolidation of their business and reliance on external sources of financing the investments related to their activity. At this latter regard, the Pandemic impacted negatively on two of them. One of the start-ups has experienced the cancellation of some financing or the prolonging of the time for receiving the financing for

their investments. The other start-ups has experienced problems from the market side in terms of a reduction of the demand for its products and a change in the relationships with its clients. The third start-ups stated that the Pandemic impacted weakly on its activity evidencing a change in the relationship with its suppliers and banks.

Notwithstanding, all the circular start-up interviewed claimed that being circular start-up- and adopting more human business models support them in better tackle this critical moment, such as the COVID19 disease. Moreover, they support the idea that their contribution to environmental sustainability somehow supports overcoming the health problems caused by the pandemic.

5. Discussion

5.1 Entrepreneurial motivations, visions, and circular business models

Results show that the entrepreneurial idea of creating their CSUs is born from: a) founder's awareness of the huge environmental problems caused by the linear model of production and consumption that is dominant in some sectors such as fashion (this is the case of Rifò): b) the desire of finding opportunities for food waste/by-products available in their local area in large amounts and optimize their valorisation with products at cascade (this is the case of Packtin). This latter aspect appears to be crucial in the creation of the spin-off Naturalmente Colore which foundation was triggered by a strong environmental ethos and desire of using locally available biological resources, as well as further increase their value at cascade compared to the landfilling disposal (De Angelis and Feola, 2020).

The case of Prespaglia is a bit different as the start-up was born to design building products manufactured with more sustainable processes and materials, including wheat straw. It seems that there was not an environmental emergence for such biological by-products behind the foundation of Prespaglia, but the desire of delivering sustainable and circular innovation in the sector. This is also in line with Osterman et al., (2021) who observed that Brazilian CSUs in fashion were mainly born to develop and implement in general more sustainable practices.

Our results are also aligned with those of existing literature focused on the motivation underlying the creation of CSUs in Italy (Ciccullo et al., 2022) and other countries (Henry et al., 2022; Rok and Kulik, 2020). The main drivers in Ciccullo et al., (2022) are the intention of the start-ups of reducing the negative environmental impacts and creating a positive social impact in their local community and supply chain. Similarly, Rok and Kulik (2020) interviewed the founders of six circular start-ups in Poland op-

erating in different economic sectors showing that their main foundation intention was also contributing to tackle the environmental issues and delivering a positive impact. The results of the interviews realized by Henry et al., (2022) reveal as main drivers for CSUs the biospheric altruism and social altruism. In that, the interviews highlight that the high environmental awareness of the founders is triggered by the conviction that business "*is a real lever in addressing the environmental problems*" (Henry et al., 2022).

The results of the analysis of visions and business environment interaction of CSUs show how such aspects are disruptive compared to that of conventional linear business models. This is the case of Rifò that claims to be critical of the programmed obsolescence in fashion. For the purpose, they design products for "longer durability" and the use of high-quality yarns, as well as "emotional durability". This product design approach aims to create a long-lasting empathy partnership between users/consumers and the products they purchase (Bocken et al., 2016). In that, this is one of key aspects in the vision of Rifò and are communicated directly and indirectly to their consumers. Moreover, it is important underline that also their artisans are embracing their vision of a circular and sustainable brand. Interestingly, the inspiration of circular consumption in their vision/mission seems a common factor in fashion sector as found in another research work of the authors (Ghisellini et al., 2022) and is of particular importance in favouring the adoption of the concept of "sufficiency" in CE transition (Bocken and Short, 2021).

The leading role of Rifò in the interaction with its business environment (integration with both consumers and suppliers) is observed in a different extent in the other two CSUs, maybe due to the different sector to which they belong, their technologies and products. However, the pioneering role and the disruptive visions of both Packtin and Prespaglia are relevant for their positive spillover effects given that they strongly needed to change the current linear mindset, even if the interaction with the business environment is not still developed as in the case of Rifò.

5.2 Humane entrepreneurship orientation and COVID-19

In this study, we aim also to better understand how the investigated CSUs could contribute to develop practices and approaches able to support human and social development both within their organizations and at local level. This aspect appears to be very critical as current literature have underlined that the CE models focus mainly on economic and sustainable development, neglecting the social dimension. In order to better recognize the contribution of CSUs to the implementation of the more human and social aspects in current CE models, we analysed their initiatives and activities able to promote more humane-centred entrepreneurship.

Results show that three CSUs investigated integrate the dimensions of HE to a different extent. Based on the interview, it is worth underlining that Rifò is able to addresses three of the HE variables investigated (e.i., Equality, Employees engagement, Ecosystem/local community involvement and development), while Prespaglia addresses two HE variables, namely Empowerment of employees, Ecosystem/local community involvement and development. Finally, Packtin through its activity tries to involve and develop the local community.

In this study, we have taken as a reference the following HE variables, that is Empowerment, Ethics, Equality/Equity, Employees engagement, and Ecosystem/local community involvement and development (Debiçka et al., 2020). These authors have assessed the perception of the importance of considering the HE variables in 126 enterprises in Poland from both the enterprise and the employee's points of view. They have found that the perception is in general high in enterprises and employees who perceive the integration of HE variables as crucial.

Increasingly scholars in entrepreneurship literature consider the focus on people, the reinforcement of employee commitment, their empowerment and the identification in the values of the enterprise as important factors useful to improve the organizational performances (Debiçka et al. 2020). The inclusion of these factors also reinforces the ability of enterprises to face with period of crisis such as the COVID-19 pandemic, increasing their competitiveness (Guckenbiehl and de Zubielqui, 2022). Interestingly, Rok and Kullik (2020) point out that founders of CSUs operate with a liberating feeling of self-efficacy and this provides them the needed engine for achieving their goals, "*and excites their teams about their potential along the way. Inherent emotion like this supplies a pure source of business value, since it raises resilience and the energy levels necessary to sustain success" (*Rok and Kullik, 2020*).*

According to our results, the role of CSUs is important for their positive effects not only on internal but also external ones. All the three CSUs are committed towards the involvement and development of the Ecosystem/local community and certainly will be useful in stimulating the orientation towards HE framework for other enterprises. Finally, it is important to highlight that Rifò was founded in the year 2017 and become a certified benefit corporation in 2021, i.e. in a relatively a short time. The adoption of such scheme demonstrates in a certifiable manner the efforts and commitment of this CSU towards the achievement of high environmental and social performances.

6. Conclusions and implications

This paper contributes to the existing research providing further evidence and knowledge on entrepreneurial motivations, visions, and business models of a small group of circular born start-ups shedding lights on their approaches to generating social, environmental, and economic value. In that, it explores a concept of value created more in line with the three pillars of sustainability and the current social and environmental challenges that call to rethink the current business models of SMEs and start-ups in new and more sustainable ways (Pencarelli et al., 2020).

The implications can be theoretical, practical and political. Both CE and in particular human entrepreneurship school of thoughts suggests alternative models of more sustainable and human-centred enterprise and entrepreneurs. Therefore, their integration is highly recommended as it would be beneficial in particular for the CE models.

Our study also provides practical and useful guidelines and insights able to inspire established SMEs to adopt circular approaches, and innovative start-ups to implement a circular business model since their foundation. Moreover, our results show the economic and social feasibility of circular enterprises. Indeed, all circular start-ups analysed show in their mission the will to commit themselves to the planet, as well as their engagement in various social (and local) activities even if with different level of awareness and responsibility. It therefore becomes clear that circular companies make it possible to narrow the boundary between economic and non-economic objectives, by pursuing both at the same time.

More in general, the lesson learned from the case studies underline that the ability to propose a business idea and manage a company while maintaining the balance between the inalienable objectives of the three pillars of sustainability determines in some way the incorporation of strategic and management methods and choices capable of maintaining an active resilience capacity to react and adapt the business to the occurrence of external phenomena of change and instability.

Results also on sustainable and humanistic entrepreneurial models could better support firms to tackle critical events, such as COVID-19 disease (or the instability of the socio-economic system caused by the ongoing war scenario), by improving their own resilience and ability to properly respond to such difficult situations.

Policy makers could improve their understanding on the models of circular born star-ups to better focus their intervention in favour of more sustainable start-ups. Environmental and social certification would be an important tool for selecting them by providing transparent and reliable information on their environmental and social performances. Moreover, the support of appropriate learning and conducive environment as well as of

start-ups initiatives can provide a key contribute to the development of circular start-ups and, at the same time, to innovation processes (Passaro et al., 2017) and to the three pillars-based sustainability (Pencarelli et al., 2020).

Specifically, policy makers could define tailored policy measures able to effectively support the transition of the established SMEs towards circular entrepreneurship models and the birth of circular innovative start-ups to pull the technological innovation aligned with the environmental and social renewal.

Acknowledgments:

The research described in this article has been funded by the following European Commission's research programme: H2020-SC5- 2020-2 scheme, Grant Agreement 101003491 (JUST2CE project).

Appendix: List of questions for the interviews

Please kindly let us know the year of foundation of your start-up, the number of the founders as well as their level of education;

How did you develop your entrepreneurial idea? Which factors contributed to the creation of your start-up?

What is your mission?

What is the number of employees and their level of education/specialization?

Please kindly describe the production process and products of your start-up or the services that you provide;

What are your future projects related to the activity of the start-up;

How do you pursue the three pillars (economic, environmental and social) of sustainable development? Is there a hierarchy between the three pillars?

Is it difficult to comply with all three pillars? What are the obstacles and what are the drivers?

What tools do you use to communicate your commitment to sustainability? Do you use a Sustainability Report?

How do you measure your company's environmental impacts? Do you adopt environmental certification labels?

Do you pay attention to the entire product life cycle? Did you perform a Life Cycle Assessment?

Are you involved in social impact projects of the local community?

What are the reasons that led you to adopt the Certified Benefit Corporation or the Benefit Corporation models? (if applicable)

Did the Covid-19 pandemic affect your activities?

If so, which type of effects did you face?

Did the relationship with your internal and external stakeholders changed during and after the pandemic?

References

Amaeshi, K., Nnodim, P., & Onyeka, O. (2012). *Corporate Social Responsibility, Entrepreneurship, and innovation*. Routledge, New York.

Bacq, S., & Lumpkin, G. T. (2021). Social Enterpreneurship and Covid-19. *Journal of Management Studies*, 58 (1). Doi: 10.1111/joms.12641

Bocken, N.M.P., & Short, S.M. (2021). Unsustainable business models – Recognising and resolving institutionalised social and environmental harm. *Journal of Cleaner Production* 312, 127128.

Bocken, N.M.P., Strupeit, L., Whalen, K., & Nussholz, J. (2021). A Review and Evaluation of Circular Business Model Innovation Tools. *Sustainability,* 11, 2210. Doi:10.3390/su11082210

Bocken, N.M.P., & Short. S.W. (2020). Transforming Business Models: Towards a Sufficiency-based Circular Economy. In: Brandão M, Lazarevic D, Finnveden G. (eds). *Handbook of the Circular Economy*. Edward Elgar Publishing. Cheltenham, UK.

Bocken, N.M.P., de Pauw, I., Bakker, C., & van der Grinten, B. (2016). Product design and business model strategies for a circular economy. *J. Ind. Prod. Eng.* 33 (5), 308–320. Doi: http://dx.doi.org/10.1080/21681015.2016.1172124

Borns, L., Brusselaers, J., Vrancken, K. C., Deckmyn, S., & Marynissen, P. (2023). Toward resilient organizations after COVID-19: An analysis of circular and less circular companies. *Resource, Conservation & Recycling* 188, 106681. Doi: https://doi.org/10.1016/j.resconrec.2022.106681

Borzaga, C. & Tallarini, G., Social Enterprises and COVID-19: Navigating between Difficulty and Resilience (2021). *Journal of Entrepreneurial and Organizational Diversity*, 10 (1), 73-83, Available at SSRN: https://ssrn.com/abstract=3929422.

Bosman, R., & Rotmans, J. (2016). Transition governance towards a bioeconomy: a comparison of Finland and The Netherlands. *Sustainability,* 8 (10), 2016.

Brinkmann, S. (2013). *Qualitative interviewing*. Oxford University Press. Doi: https://doi.org/10.1093/acprof:osobl/9780199861392.001.0001

Ceraulo, S. (2021). *From value and purpose, to overcome the Pandemic: MGA of the "Poliambulatorio Risana"*, Paper presented at 5th PIBS Workshop, 3-4 December 2021, (pp. 72-92). Urbino University Press.

Ciccullo, F., Pero, M., & Patrucco, A. (2022). Designing circular supply chains in start-up companies: evidence from Italian fashion and construction start-ups. *The International Journal of Logistic Management*. Doi: 0957-4093. 10.1108/IJLM-04-2022-0158

Cohen, M.J. (2020). Does the COVID-19 outbreak mark the onset of a sustainable consumption transition? *Sustainability: Science Practice and Policy*, 16(1), 1-3.

Coppola, C., Vollero, A., & Siano, A. (2023). Developing dynamic capabilities for the circular economy in the textile and clothing industry in Italy: A natural-resource-based view. *Business Strategy and the Environment*, 1–23. https://doi.org/10.1002/bse.3394

Dana, L. P., Demartini, P., Ramadani, V., & Schiuma, G. (2019). Social Capital, Entrepreneurship & Entrepreneurial Ecosystems. *Piccola Impresa/Small Business*, 3. Doi: https://doi.org/10.14596/pisb.369

De Angelis, R., & Feola, R. (2020). Circular business models in biological cycles: The case of an Italian spin-off. *Journal of Cleaner Production*, 247, 119603. Doi: https://doi.org/10.1016/j.jclepro.2019.119603

Debiçka, A., Olejniczak, K., & Skąpska, J. (2021). Enterprises' perception and practice of humane entrepreneurship. *Journal of Small Business and Enterprise Development* 29 (1), 127-146. Doi: 10.1108/JSBED-01-2021-0028

De Keyser, E. & Mathijs E. (2023). A typology of sustainable circular business models with applications in the bioeconomy. *Frontiers in Sustainable Food Systems* 6, 1028877. Doi: 10.3389/fsufs.2022.1028877

Del Baldo M., & Baldarelli M.G. (2019). Serving the Poor: The Case of the EoC Enterprise 'Mercurio Net' in Bouckaert, L., & Van den Heuve, S. (Eds), *Servant Leadership, Social*

Entrepreneurship and the Will to Serve. Macmillan, London, Springer Nature Switzerland AG.

Eisenhardt, K.M. (1989). Building theories from case study research. *The Academy of Management Review*, 14 (4), 532-550. Doi: https://doi.org/10.2307/258557

Elkington, J. (1989). Cannibals with Forks: *The Triple Bottom Line of 21st Century Business*. Capstone. Doi: https://doi.org/10.1002/tqem.3310080106

European Commission, 2020. COMMUNICATION 1 FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A new Circular Economy Action Plan For a cleaner and more competitive Europe, COM/2020/98 final, available at: https://eur-lex.europa.eu/resource.html?uri=cellar:9903b325-6388-11ea-b735-01aa75ed71a1.0017.02/DOC_1&format=PDF, Last accessed: 20/03/23.

Fioravante, R., D'Anghela, M., & Del Baldo, M. (2021). *From Skin Care to Health Care: Female entrepreneurship, profitability and humanistic management in Veralab case*. Paper presented at 5th PIBS Workshop, University of Urbino, 3-4 December 2021 (pp 108-123). Urbino University Press.

Gerbaudo, P. (2021). Un nuovo statalismo climatico. *IL Mulino Rivista Web*, available online at: https://www.rivistailmulino.it/a/un-nuovo-statalismo-climatico. Last accessed: 04/04/2022.

Ghisellini, P., Quinto, I., Passaro, R., & Ulgiati, S. (2022). Evaluating good practices of ecological accounting and auditing in a sample of circular start-ups. Annual European SPES Conference, May 19-21, 2022, Urbino, Italy.

Ghisellini, P., Passaro, R., & Ulgiati, S. (2021a). Revisiting Keynes in the Light of the Transition to Circular Economy. *Circular Economy and Sustainability*, 1, 143–171. Doi: https://doi.org/10.1007/s43615-021-00016-1

Ghisellini, P., Quinto, I., Passaro, R., & Ulgiati, S. (2022). *Exploring the role of circular start-ups in promoting a more sustainable and humane entrepreneurship*. Paper presented at 5th PIBS Workshop, University of Urbino, 3-4 December 2021 (pp 124-150). Urbino University Press.

Ghisellini, P., & Ulgiati, S. (2020). Circular economy transition in Italy. Achievements, perspectives and Constraints. *Journal of Cleaner Production*, 243, 118360. Doi: https://doi.org/10.1016/j.jclepro.2019.118360.

Gibbert, W., Wicki, B., & Gibbert, M. (2008). What Passes as a Rigorous Case Study. *Strategic Management Journal*, 29(13). DOI: 10.1002/smj.722.

Guckenbiehl, P., & Corral de Zubielqui, G. (2022). Start-ups' business model changes during the COVID-19 pandemic: Counteracting adversities and pursuing opportunities. *International Small Business Journal*, *40* (2), 150–177. Doi: https://doi.org/10.1177/02662426211055447

Henry, M., Hoogenstrijd, T., & Kirchherr, J. (2022). Motivations and identities of "grassroots" circular entrepreneurs: An initial exploration. *Business Strategy and the Environment 32 (4), 1-20.* 1-20. DOI: 10.1002/bse.3097

Henry, M., Bauwens, T., Hekkert, M., & Kirchherr, J. (2020). A typology of circular start-ups: An Analysis of 128 circular business models. *Journal of Cleaner Production*, 245, 118528. Doi: https://doi.org/10.1016/j.jclepro.2019.118528

Katafuchi, Y., Kurita, K., & Managi, S. (2020). COVID-19 with stigma: Theory and evidence from mobility data. *Economics of Disasters and Climate Change*, *5* (1), 71-95. Doi: https://doi.org/10.1007/s41885-020-00077-w

Kim, K. C., ElTarabishy, A., & Bae, Z.T. (2018). Humane entrepreneurship: How focusing on people can drive a new era of wealth and quality job creation in a sustainable world. *Journal of Small Business Management*, 56, 10-29. Doi: https://doi.org/10.1111/jsbm.12431

Kirchherr, J. W., & Van Santen,R. (2019). Research on the circular economy: A critique of the field. *Resources, Conservation & Recycling,* 151, 104480. Doi: https://doi.org/10.1016/j.resconrec.2019.104480

Kurita, K., & Managi, S. (2022). COVID-19 and Stigma: Evolution of Self-restraint behaviour. *Dynamic Games and Applications* 12**,** 168–182. Doi: https://doi.org/10.1007/

s13235-022-00426-2

IPCC, Intergovernmental Panel on Climate Change (2021). Climate change, rapid, widespread and intensifying, available online at: https://www.ipcc.ch/2021/08/09/ar6-wg1-20210809-pr/ Last accessed: 17/11/2021.

ISO 26000. Social responsibility – 7 core subjects of ISO 26000, available at: https://www.iso.org/publication/PUB100259.html. Last accessed: 20/03/2023.

Jakobsen, O., & Zolnai, L. (Eds.) (2017). *Integral Ecology and Sustainable Business*. Emerald, Bingley, West Yorkshire, UK.

Le, T. T., 2022. How humane entrepreneurship fosters sustainable supply chain management for a circular economy moving towards sustainable corporate performance. J*ournal of Cleaner Production,* 368, 133178. https://doi.org/10.1016/j.jclepro.2022.133178

Merli, R., & Preziosi, M. (2018). The EMAS impasse: Factors influencing Italian organizations to withdraw or renew the registration. *Journal of Cleaner Production* 172, 4532-4543. Doi: https://doi.org/10.1016/j.jclepro.2017.11.031

Molteni, M. (2009). Aziende a movente ideale. In L. Bruni & S. Zamagni (Eds.), *Dizionario di Economia Civile* (pp. 65–75). Roma: Città Nuova.

Muñoz, P., & Cohen, B. (2017). Sustainable Entrepreneurship Research: Taking Stock and looking ahead. *Business Strategy and the Environment*, 27 (3) 300-322. Doi: https://doi.org/10.1002/bse.2000

Murmura, F., Liberatore, L., Bravi, L., & Casolani, N. (2018). Evaluation of Italian Companies' Perception About ISO 14001 and Eco Management and Audit Scheme III: Motivations, Benefits and Barriers. *Journal of Cleaner Production* 174, 691-700. Doi: https://doi.org/10.1016/j.jclepro.2017.10.337

Nigri G., Del Baldo, M., & Agulini, A. (2020). Governance and accountability models in Italian certified benefit corporations. *Corp Soc Responsibility & Environmental Management*. 27 (5), 2368-2380. Doi: https://doi.org/10.1002/csr.1949

Ostermann, C.M., da Silva Nascimento, L., Steinbruch, F.K., & Callegaro-de-Menezes, D. (2021). Drivers to implement the circular economy in born-sustainable business models: A case study in the fashion industry. *Revista de* Gestão, 28(3), 223–240. https://doi.org/10.1108/REGE-03-2020-0017

Padilla-Rivera, A., Russo-Garrido, S., & Merveille, N. (2020). Addressing the Social Aspects of a Circular Economy: A Systematic Literature Review. *Sustainability*, 12(19), 7912. Doi: https://doi.org/10.3390/su12197912

Parente, R., El Tarabishy, A., Botti, A., Vesci, M., & Feola, R. (2020). Humane entrepreneurship: Some steps in the development of a measurement scale. *Journal of Small Business Management*. Doi: 10.1080/00472778.2020.1717292

Parente, R., El Tarabishy, A., Vesci, M., & Botti, A. (2018). The epistemology of humane entrepreneurship: Theory and proposal for future research agenda. *Journal of Small Business Management*, 56, 30-52. Doi: https://doi.org/10.1111/jsbm.12432

Passaro, R., Quinto, I. & Thomas, A. (2017). Start-up competitions as learning environment to foster the entrepreneurial process. *International Journal of Entrepreneurial Behavior & Research*, 23(3), 426-445. Doi: https://doi.org/10.1108/IJEBR-01-2016-0007

Pencarelli, T., Cesaroni, F. M., & Demartini, P. (2020). Covid-19 and Italian Small and Medium Sized enterprises: Consequences, Threats and Opportunities. *Piccola Impresa/Small Business,* 3. Doi: https://doi.org/10.14596/pisb.413

Pieroni, M. P. P., McAloone, T.C., & Pigosso, D.C.A. (2019). Business model innovation for circular economy and sustainability: A review of approaches. *Journal of Cleaner Production*, 215, 198–216. https://doi.org/10.1016/j.jclepro.2019.01.036

Rok, B., & Kulik, M. (2020). Circular start-up development: the case of positive impact entrepreneurship in Poland. *Corporate Governance: The International Journal of Business in Society,* available at: https://doi.org/10.1108/CG-01-2020-0043

Sentuti, A., & Cesaroni, F. M. (2021). *Do sustainability and food safety stimulate innovation among agri-food entrepreneurs? The experience of Italian innovative startups during the Covid-19*

pandemic. Paper presented at 5th PIBS Workshop, 3-4 December 2021, Urbino University Press.

Suchek, N., Ferreira, J. J., & Fernandes, P. O. (2022). A review of entrepreneurship and circular economy research: State of the art and future directions. *Business Strategy and the Environment*, 31(5), 2256–2283. https://doi.org/10.1002/bse.3020

Uelmen, A.J., & Bruni, L. (2006). Religious Values and Corporate Decision Making: The Economy of Communion Project. *Fordham Journal of Corporate and Financial Law*. *Symposium on Religious Values and Corporate Decision Making*, 11, 645-680, Fordham Law Legal Studies Research Paper No. 910238, Available at SSRN: https://ssrn.com/abstract=910238

Van Langen, K., Vassillo, C., Ghisellini, P., Restaino, D., Passaro, R., Ulgiati, S. (2021). Promoting circular economy transition: A study about perceptions and awareness by different stakeholders groups. *Journal of Cleaner Production* 316, 128166. Doi: https://doi.org/10.1016/j.jclepro.2021.128166

Veleva, V., & Bodkin, G. (2018). Corporate-entrepreneur collaborations to advance a circular economy. *Journal of Cleaner Production*, 188, 20–37. https://doi.org/10.1016/j.jclepro.2018.03.196

Wuyts, W., Marin, J., Brusselaers, J., & Vrancken, K. (2020). Circular economy as a COVID-19 cure. *Resources, Conservation & Recycling*, 162, 105016. Doi: https://doi.org/10.1016/j.resconrec.2020.10501

Yoo, S., Keeley, A. R., & Managi, S. (2021). Does sustainability activities performance matter during financial crises? Investigating the case of COVID-19. *Energy Policy*, 155, 112330. Doi: https://doi.org/10.1016/j.enpol.2021.112330

Zamagni, V. (2016). Perchè il neo-liberalismo non è sostenibile. *Quaderni di Economia del lavoro*, 106, 13-30 in onore di Luigi Frey.