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The role of crowdfunding in endorsing responsible open innovation for shared value co-creation: a systematic literature review

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Abstract

Purpose – This paper aims to investigate the intersection between crowdfunding (CF), open innovation (OI) and responsible innovation (RI) and identify the emerging trends and gaps in research and new paths for CF research in the future. In addition, this paper proposes a conceptual framework and propositions.

Design/methodology/approach – This paper is structured in line with the systematic literature review protocol. After reading all the titles, keywords and abstracts, 172 papers focused on OI and RI were selected for this research. Finally, 27 papers that are based on dimensions related to responsible OI were selected for the study.

Findings – Due to CF's multidisciplinary nature, the scientific literature on the role of CF in endorsing responsible OI for shared value co-creation appears fragmented and redundant. Several emerging trends and gaps of research and new paths for CF research in the future arise regarding research methodology and theoretical perspective.

Originality/value – To the best of the authors' knowledge, this is the first study investigating the intersection between CF OI and RI.

Keywords Open innovation, Responsible innovation, Crowdfunding, Value co-creation

Paper type Research paper

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1. Introduction

Over the last decade sustainability has become a major focus of innovation, giving rise to a whole paradigm of research on sustainable innovation (Franceschini *et al.*, 2016; Schiederig *et al.*, 2012), or sustainability-oriented innovation (Lubberink *et al.*, 2017), a type of innovation in which innovation processes are initiated to pursue sustainable development and take into account social, economic and environmental concerns (Lubberink *et al.*, 2019; Schiederig *et al.*, 2012). Although there is a plethora of definitions of sustainable innovation, researchers agree in identifying a development path of sustainable innovation studies from an early stage of main focus on environmental concerns to a more recent turn, which is more people-oriented and analyzing the social dimension of sustainable innovation (Adams *et al.*, 2016). More specifically, the first trend investigated primarily green, eco-, environmental aspects to directly answer "grand societal challenges" (European Commission, 2013), such as pollution, dependency on fossil fuels, climate change, increasing energy consumption and water shortage (Adams *et al.*, 2016; Charter and Clark, 2007). Instead, more recently researchers have been adopted a more holistic approach to analyzing sustainable innovation that also addresses the social dimensions (Adams *et al.*, 2016), with specific attention paid to the involvement of societal actors and processes of value co-creation (Alegre and Moleskis, 2021).

In this vein, reflection on sustainable innovation has evolved and intersected with the emerging research trend of responsible innovation (RI). RI, which includes but is not limited to sustainability (Cumming and Johan, 2020), is considered a type of innovation based on transparent processes by which societal actors and innovators are mutually responsive (Von Schomberg, 2012) and interact in order to devise innovations and products that are ethically acceptable, sustainable and that bring societal benefits (Burget *et al.*, 2017; Gianni and Goujon, 2014; Thomas, 2022; Von Schomberg, 2012; Wickson and Carew, 2014). One of the main focuses of RI is multi-stakeholder involvement and engagement (including citizens and communities) to co-create value for society from the early stages of the innovation process. The resulting more democratic governance framework for innovation (Owen *et al.*, 2013; Stilgoe *et al.*, 2013) is centered on considering the purpose and value of the innovation itself and implies co-responsibility of innovation outcomes (Ribeiro *et al.*, 2016).

Multi-stakeholder involvement, co-design and co-creation of value are also at the basis of another stream of research related to innovation, namely open innovation (OI). OI indeed is the ability to innovate through external interactions across businesses (Gassmann *et al.*, 2010; Huizingh, 2011). In OI frameworks, value is co-created through exchanges with partners, clients and research groups (inbound OI), but also externalizing knowledge (outbound OI) (Caputo, 2013). These types of innovation processes have been recently facilitated by the increasing use of collaborative digital platforms that simplify the above-mentioned interactions and the knowledge exchange among the different actors of innovation (Ahmed *et al.*, 2021; Ardito *et al.*, 2019; Cappa, 2022; Cappa *et al.*, 2022; Farooq Sahibzada *et al.*, 2022; Gu *et al.*, 2022; Matricano *et al.*, 2019; Medda, 2020; Scuotto *et al.*, 2017, 2020).

This reflection on the role of digital platforms in OI has also recently included studies on crowdfunding (CF) platforms, which have been described as a compelling type of OI platform since they are able to activate new combinations of knowledge and resources (Brem *et al.*, 2019; Thomas, 2021). Even further, the whole CF phenomenon has been interpreted as an OI process, in which CF campaigns are used as open levers for gaining information about potential markets, testing products, raising awareness and in general using the "wisdom of the crowd" to gain knowledge advantages and benefits (Belleflamme *et al.*, 2014; West and Bogers, 2014). Moreover, in the many studies on CF as an OI tool, several aspects related to the previously mentioned and related paradigm of RI are emerging (Calic and Mosakowski, 2016). For instance, the attention to the ethical dimension of CF projects (Shneor and Torjesen, 2020; Shneor and Vik, 2020), the concern of meeting sustainability challenges (Böckel *et al.*, 2021; Petruzzelli *et al.*, 2019), the idea of the importance of exchanges with communities (even

if primarily online communities) of stakeholders for value co-creation (Valančienė and Jegelevičiūtė, 2014) or the attention on CF as a tool to meet social and environmental needs of society (Mariani *et al.*, 2017).

It seems, therefore, that an emerging path relating CF to OI and to RI is emerging, thus linking the CF phenomenon to approaches related to responsible OI, considered as a type of OI that also includes RI practices and concerns (Maric *et al.*, 2015). The idea that CF could become a tool for a new type of innovation that combines ideas related to both RI and OI is, however, not yet systematized and partially explored in literature.

While CF, OI and value co-creation (considered as the common themes among the two types of innovation) are regularly discussed in the literature, some features of RI are implied but often unmentioned. By compiling, examining and evaluating the vast body of literature regarding CF, value co-creation and OI, we can find repeating patterns and essential areas of convergence or divergence with RI.

In order to address the emergence of the new pattern of responsible OI through CF, our paper will systematically identify and critically assess the literature related to the dimensions of OI and co-creation of value (seen as the unifying element between the two paradigms of OI and RI) in the CF arena and relate it to the different dimensions of RI. Though there exists a consensus that both inbound and outbound OI mediates and moderates the path of successful CF projects (Boudreau *et al.*, 2021; Cappa *et al.*, 2021a, b), there are only a few studies that have investigated the intersection between OI and RI in value co-creation through a CF project. By focusing on the intersection between OI and RI as a value co-creation process and outcome of CF projects, this study also adds deeper insights to the most recent debates on success signals in CF campaigns. It indeed exposes and analyzes the part of the scientific literature that focuses on factors of relational capital (Troise *et al.*, 2022), social network (Troise, 2020), intangible benefits (Cappa *et al.*, 2021a, b) as well as nonpecuniary (Boudreau *et al.*, 2021) or altruistic motivations (Baber and Fanea-Ivanovici, 2021; Nielsen and Binder, 2021; Ryu *et al.*, 2020), rather than on factors related to equity, managerial competences or tangible rewards in CF projects (Kleinert *et al.*, 2020; Maiolini *et al.*, 2019).

This systematic literature review involves developing theory and practice in many ways. It highlights research streams and literature gaps, indicating prospective areas for further research. To investigate responsible OI models, the paper identifies dimensions of responsible and OI in CF that have been addressed in significant research studies. It is guided by the following research questions: (RQ1) "How does crowdfunding literature address the different dimensions of open innovation (inbound and outbound) and value co-creation?"; (RQ2) "How are the topics of crowdfunding open innovation and value co-creation intersecting the areas of responsible innovation?" and finally (RQ3), "What are the emerging trends and gaps of research, and how will our analysis indicate new paths for crowdfunding research in the future?"

The paper is structured in line with systematic literature reviews and guidelines (Buchheim *et al.*, 2020; Caputo *et al.*, 2016; Fisch and Block, 2018). In the second section, the authors describe the theoretical framework and how it informs the structure of the systematic literature review. The two following sections describe the methodology of the research and the results of the analysis. Section five discusses the results concerning previous research, drawing some concluding remarks on the paper's contribution to both theoretical and practical implications.

2. Theoretical background

RIs are required to transition to a more sustainable and responsible economy. Responsible innovators require not only ideas but also financial resources to achieve this goal. However, nascent sustainability entrepreneurs, in particular, face trust concerns and other funding issues. It is an entrepreneurial strategy that primarily benefits small businesses with limited access to money, which receive financial and non-financial resources via CF (Mollick, 2014;

Schjoedt and Shaver, 2020). Value co-creating participants in the context of CF (Belleflamme *et al.*, 2014; Ordanini *et al.*, 2011; Quero and Ventura, 2015) include the creative core, platform, the funding consumers and non-financing customers, the investors and the experts. Cumming and Hornuf (2018) categorize CF as reward-based, investment, loan and donation-based platforms and Hörisch (2019) and Jovanović (2019) into pre-funding and post-funding stages.

Petruzzelli *et al.* (2019) investigated CF, particularly in sustainable entrepreneurship. According to Jovanović (2019), only 5% of the literature focuses on CF and innovation and only 8% on CF and sustainability or social values. While there is much emphasis on using crowds' "collective wisdom" in value co-creation, entrepreneurs must consider the actual benefit of the "crowd" to their project. According to Täuscher (2017), a large crowd can have a negative externality, lowering the customer experience. Furthermore, the "honeymoon-hangover effect" has resulted in decreased social value, knowledge-sharing and customer loyalty throughout the project (Piyathasanan *et al.*, 2018). Because CF projects differ in complexity, nature and reward expectations, moderating variables that increase value co-creation must be identified.

CF results in a shift of power away from the entrepreneur and toward the crowd (Belleflamme *et al.*, 2014). It may lead to entrepreneurs restricting information after a successful fundraising campaign. There is a problem with the delivery of results to the crowd due to incompetence, fraud and project cancellations (Appio *et al.*, 2020). The post-funding phase of the CF campaign has received far less attention, particularly in the case of value co-creation distribution (Böckel *et al.*, 2021). According to Hörisch (2019), only a tiny percentage of post-funding CF entrepreneurs recognize their contribution to sustainability.

According to Fundera's (2022) website, 22.4% of CF projects succeed. In 2020, only 37% of CF projects were successful on Kickstarter, which is a global CF platform focused on creativity (Su *et al.*, 2021). Still, three-quarters of the effort has failed. Calic and Mosakowski (2016) found that socially oriented CF initiatives are more successful. These findings were substantiated by Shneor and Vik (2020). For instance, most research does not address proof of concept, brand building, sales start, product development and market validation. As a result, focusing on responsible open innovation (ROI) may help resolve disagreements between crowds and entrepreneurs. ROI creates long-term solutions for the community and a competitive advantage for the entrepreneur. Also, in the current economic and credit situation after COVID-19, CF-based projects may be a source of economic and social benefit for small firms and entrepreneurs.

2.1 Value co-creation and crowdfunding

Value co-creation is one of the most critical ways to innovate in services management (Verma *et al.*, 2023). The underpinning of value co-creation is based on the theories of Vargo and Lusch (2008) Service-dominant logic; Grönroos (2008, 2011) Service logic approach; Maglio and Spohrer (2008) Service science and Gummesson (2007, 2008) Many-to-many marketing. According to Russo-Spena and Mele (2012, p. 527), value co-creation is "used to challenge the existing history of invention and depict a new and promising vision of innovation." Value co-creation between actors mainly occurs on three levels: micro-level or classical dyad or focal factor or direct service-for-service exchange, meso-level or indirect service-for-service exchange through triad or stakeholder system and macro-level or complex network through direct and indirect services or service ecosystem (Chandler and Vargo, 2011; Frow *et al.*, 2014; Gummesson, 2008). Value co-creation in CF is achieved by interactions of both customers (e.g. backers) and entrepreneurs (e.g. fundraisers) (Vargo and Lusch, 2004). From this vantage point, CF may be viewed as a service ecosystem where all actors create positive qualities that benefit all participants and thus encompasses all levels of service exchange: micro-, meso- and macro-levels of co-creation of value (Quero *et al.*, 2017). Value co-creation occurs in various ways – for instance, how value is co-created in CF, the "Five C" model by Quero *et al.* (2013)

and the "Seven Co" model by Quero *et al.* (2017) provide thorough insights. "Co-ideation, co-design, co-testing, co-launch, co-financing, co-consumption, and co-evaluation of ideas" are the seven CF categories. Value co-creation is crucial for CF entrepreneurs to improve competitiveness and brand value (Luo *et al.*, 2015).

2.2 Value co-creation in crowdfunding through open innovation

OI is an inherent phenomenon in CF (Chu *et al.*, 2019). OI is about the ability to innovate from external interactions across businesses, which might be inbound or outbound (Enkel *et al.*, 2020; Gassmann *et al.*, 2010; Huizingh, 2011). In inbound OI (outside-in process), the knowledge flows from external partners, clients, institutions and research groups to the focal firm (Leitão *et al.*, 2020). The process of externalizing internal knowledge through the sale of patents, direct licensing, or other means is known as outbound OI (inside-out process) (Leitão *et al.*, 2020; Thomas, 2021). Experts have recently emphasized the importance of crossing organizational boundaries to compensate for lack of internal resources, as well as the role that digital platforms could play in meeting this need (Chesbrough, 2003; Matricano *et al.*, 2019; Scuotto *et al.*, 2017, 2020; Vanhaverbeke, 2013). Digital platforms could deal with the growing complexity and risks of the innovation process, which asks firms to adopt an outsourcing R&D strategy and outsource knowledge (Jain *et al.*, 2022; Medda, 2020). CF platforms have been recognized as compelling examples of OI platforms for these reasons (Brem *et al.*, 2019). They are "an important carrier for searching external knowledge" (Hossain and Lassen, 2017, p. 55) and, as a result, "an important carrier for activating new combinations of knowledge and creating novel and valuable solutions to innovation problems." Furthermore, the whole CF phenomenon has been indicated as an open-innovation tool. Organizations use the "wisdom of the crowd" (Belleflamme *et al.*, 2014; Polzin *et al.*, 2018; West and Bogers, 2014) (i.e. investors skills and knowledge) to gain advantages, like enhanced knowledge of the market, promotional abilities and associations with primary stakeholders (Di Pietro *et al.*, 2018; Estrin *et al.*, 2018; Troise *et al.*, 2020). Thus, CF is open leverage for gaining knowledge about markets, planning, products or services, enhancing public awareness and networking for organizations' successful functioning (Di Pietro *et al.*, 2018; Estrin *et al.*, 2018; Troise and Tani, 2021).

Much research connects the CF with OI, CF with value co-creation, CF campaign success factor and others. At the same time, the research connecting the RI and CF and measuring impact on value co-creation is scant and fragmented. Also, there is a need to define ROI from the existing literature.

2.3 Value co-creation in crowdfunding through responsible open innovation

RI is a relatively new concept that includes thoughts about the economy, society, culture and environment in the innovation process to provide "more responsible" solutions for future issues (Lubberink *et al.*, 2019, p. 179). There are numerous definitions of RI. Some are based on the innovation process (process dimension) and others are based on the outcome of the process (product dimension) (Van de Poel and Sand, 2021). Stilgoe *et al.* (2013) and Owen *et al.* (2013) classified RI in four dimensions: Inclusion, Anticipation, Reflexivity and Responsiveness.

The definitions of Von Schomberg (2013) and Van den Hoven (2013) have linked RI with innovative products, marketable products, new designs, new institutions, software, organizations, or combinations which are feasible solutions to solve a set of moral and ethical questions. Overall, RI helps entrepreneurs meet potentially diverse and conflicting values by overcoming the moral overloads of innovation (Van de Poel and Sand, 2021; Van den Hoven, 2013). Thus, in a firm context, responsible OI (ROI) can be defined as using external stakeholder knowledge to find responsible solutions for new products and services development.

In this vein, RI should open the innovation process to societal actors beyond immediate beneficiaries (Jarmai and Vogel-Pöschl, 2020). This aspect of RI is described in academic literature as stakeholder engagement, stakeholder involvement, public engagement, public participation and community involvement (Marschalek *et al.*, 2017). Such engagement with stakeholders ensures the democratic nature of the RI process and attempts to increase the diversity of perspectives conducive to innovation (Owen *et al.*, 2013; Powell and Colin, 2008).

Over the last decade, RI has influenced all the disciplines (Fisher, 2020), including finance and banking (Armstrong *et al.*, 2012; Asante *et al.*, 2014; Hilmi, 2018) and business models (Halme and Korpela, 2014). In the face of grand societal challenges that transcend national borders (Ferraro *et al.*, 2015; George *et al.*, 2016), such as poverty, climate change, health crisis, etc., RI creates economic value and social value (Bacq and Aguilera, 2022). RI involves developing products and services with stakeholders to minimize harm and enhance the benefit to people and the ecosystem (Scherer and Palazzo, 2011; Stahl and Sully de Luque, 2014; Voegtlin and Scherer, 2017). RI creates both private and social value when it comes to public goods. In terms of major social challenges, these can range from unique business models that revitalize industries and use local talent to innovative solutions that improve coverage, reach, efficiency and efficacy of public health campaigns. RI attempts to improve society by reducing negative externalities of institutional and market failures for various stakeholders.

RI is based on the four aspects of inclusion**,** reflexivity, anticipation and responsiveness (Stilgoe *et al.*, 2013). The inclusion of RI involves inclusively opening to the diverse and broader perspective of the public and stakeholder, right from framing through to developing a solution to the problem (Owen *et al.*, 2013). The CF platform exposes the problem statement to the audience, allowing project entrepreneurs to pitch funders. Funders can reward or invest in the initiative. Crowds and their diverse inputs are vital for inbound and outbound innovation. The inbound innovation community helps validate problems by co-creating and co-designing them (Paschen, 2017; Russo-Spena and Mele, 2012). The financial backing also validates the market validation (Paschen, 2017). The crowd can co-test, co-evaluate and co-launch product prototypes (Russo-Spena and Mele, 2012). Crowd facilitates the co-consumption of produced products and services (Quero *et al.*, 2013, 2017) and is critical for product validation (Paschen, 2017). Thus, effective risk-sharing in co-financing (Ordanini *et al.*, 2011) increases project success rates. Interactions with other funders and commercial partners boost the value capture of CF projects (Laffey *et al.*, 2021). Several researchers have examined the strategic role of shared values and meaning in CF campaigns (Cai *et al.*, 2021; Gleasure and Feller, 2016; Zhao *et al.*, 2017), supporting Kramer and Porter's (2011) findings that creating shared value not only advances social progress but also identifies missed economic opportunities.

The inclusive nature of the CF platform depends on the transparency and efficient risk-sharing between the entrepreneur and the crowd. The reflexivity dimension of RI calls for reflection on underlying purpose, motivation, knowns, unknowns, uncertainties, questions and dilemmas (Owen *et al.*, 2013). CF lowers bureaucracy and raises fundraising speed (Laffey *et al.*, 2021) by eliminating the intermediaries and strict due diligence process. The entrepreneur needs to communicate the trust and reputation of the project to the crowd (Zheng *et al.*, 2016). CF entrepreneurs should earn public support for the outcomes (Sykes and Macnaghten, 2013) by championing the cause and should involve stakeholders in assessing the social desirability of alternatives and outcomes (Eden *et al.*, 2013). By addressing concerns, an entrepreneur creates desirable value for the public.

The anticipation dimension of RI addresses the path from desirability to sustainability. The anticipation aspect analyzes the intended and potential unintended impacts of value creation and helps in addressing three pillars of sustainable innovation (social, economic and environmental) (Owen *et al.*, 2013). The CF platforms extend the bounded rationality of

entrepreneurs through the collective wisdom of the crowd (Boudreau and Lakhani, 2013; King and Lakhani, 2013; O'Mahony and Lakhani, 2011). The entrepreneur and crowd should together identify and clarify all the socio-ethical impacts of the project (Flipse *et al.*, 2013; Schuurbiers, 2011; Sykes and Macnaghten, 2013; Wynne, 2011). Together they can identify new opportunities (van den Hoven, 2013) to co-create sustainable values for the stakeholders. The CF offers entrepreneurs a platform to co-test the end product easily, providing ready customer feedback (Gierczak *et al.*, 2016). The entrepreneur can also let the crowd modify, redistribute or distribute licenses under an open-source system (like Creative-Commons and Open-Source Software) (Quero *et al.*, 2017). It fosters more OI and improves the technical quality and marketability of the end product. Mitchell (1999) perceived risks better explain consumers' behavior as "consumers are more often motivated to avoid mistakes than to maximize utility in purchasing" (p. 454). By knowing risks beforehand, the CF campaign will help systematically reduce the potential risk so that the crowd can invest and increase their success (Mollick, 2014). It will also help some visitors turn into the project's backers.

The dynamic nature of customer taste, preferences and circumstances call for RI's responsiveness phase in OI. The responsiveness aspect calls for setting the direction and innovation trajectory for achieving more desirable outcomes (Owen *et al.*, 2013; Stilgoe *et al.*, 2013). The CF requires entrepreneurs to engage the audience or funders on social media channels, solicit customer feedback at all phases and generate socially desirable, ethically acceptable and high-quality outcomes. The entrepreneur must dynamically integrate all resources and be open to stakeholder evaluation (Cillo *et al.*, 2019). Stakeholder engagement in a sustainable innovation ecosystem is critical (Schaltegger and Wagner, 2011) to help stakeholders experience innovation, serve society and have greater control and freedom to change and improve end-product quality and performance (Bitzer and Geishecker, 2010; Olson and Rosacker, 2013). The speed of responsiveness creates a competitive advantage for the firm (Von Schomberg, 2013; Wickson and Carew, 2014; Zwart *et al.*, 2014).

The theoretical framework helps in critically identifying qualifiers using *rationale* and *implementation* (Fraaije and Flipse, 2020) of the CF process in value co-creation. The qualifiers are arranged as per the RI phases and then arranged as inbound and outbound innovation processes, which will help select the critical literature to study (see Tables 1 and 2).

3. Methodology

The research methodology for the systematic literature review is proposed by Tranfield *et al.* (2003). A systematic review is a method of analyzing a body of literature. It uses a set of structured and reproducible stages that allow researchers to improve the review process (Caputo, 2013; Tranfield *et al.*, 2003). The author(s) did a comprehensive systematic review of the literature to answer the research questions stated in the introduction. To begin, relevant papers were found through an advanced search of the title and keywords of publications between 2002 and 2022 in the Web of Science databases. The selection of these databases was based on their ability to contribute to the search for literature review and bibliographic information. The first task is to study the literature and based on the literature and theoretical framework the author(s) identified the important qualifiers. In the next step, the query was formulated on January 31, 2022, using the following strings: ["Crowdfunding" and "Value co-creation"]; ["Crowdfunding" and "Open Innovation*"]; ["Crowdfunding" and "Inbound*"]; ["Crowdfunding" and "Outbound*"]; ["Value Co-creation" and "Open Innovation*"]; ["Responsible Innovation" and "Value Co-creation*"]; ["Responsible Innovation" and "Crowdfunding*"] and ["Engagement"] and ["Responsible Innovation*"]. By formulating the earlier-mentioned query of the selected terms in titles, abstracts and keywords published in two decades through the TITLE-ABS-KEY operator, 2,125 articles are detected. The results include published journal articles and conference papers. Following that, criteria are identified

Crowdfunding (CF)	Value co-creation	Open innovation (OI)	Responsible innovation (RI)
(Belleflamme *et al.*, 2014; Ordanini *et al.*, 2011; Quero and Ventura, 2015) Actors: creative core, platform, financing consumer, non-financing customers, investors and experts	(Quero *et al.*, 2017) micro-, meso- and macro-levels	(Gassmann *et al.*, 2010; Huizingh, 2011) inbound OI	(Stilgoe *et al.*, 2013; Owen *et al.*, 2013) RI process dimensions: Inclusion, Reflexivity, Anticipation and Responsiveness
(Cumming and Hornuf, 2018) CF platforms: reward-based, investment-based, lending-based and donation-based	(Vargo and Lusch's, 2008) Twelve Co-s:co–conception of ideas, co-design, co-production, co-promotion, co-pricing, co-distribution, co-maintenance, co-consumption, co-experiencing, co-creation of meaning, co-disposal and co-outsourcing	(Gassmann *et al.*, 2010; Huizingh, 2011) outbound OI	(von Schomberg, 2012; van den Hoven, 2013) RI product dimensions: innovative products, marketable products, new designs, new institutions, software, organizations, or their combinations
(Hörisch, 2019; Jovanović, 2019) CF phase: pre-funding and post-funding phase	(Russo-Spena and Mele's, 2012) Five Co-s: co-ideation, co-valuation, co-design, co-test and co-launch	(Paschen, 2017; Laffey *et al.*, 2021)problem validation, product validation; market validation	(Jarmai and Vogel-Pöschl, 2020; Marschalek *et al.*, 2017)stakeholder engagement, stakeholder involvement, public engagement, public participation, and community involvement
	(Ordanini *et al.*, 2011) co-financing	(Mollick, 2014) expand capacity for change; customer feedback	(Bacq and Aguilera, 2022) creates economic value and social value
	(Quero *et al.*, 2017) Seven Co-s: co-ideation; co-design; co-testing; co-launch; co-financing; co-consumption and co-evaluation of ideas	(Bitzer and Geishecker, 2010; Olson and Rosacker, 2013) high-quality outcomes	(Ferraro *et al.*, 2015; George *et al.*, 2016) solves grand societal challenges
	(Luo *et al.*, 2015) commitment and loyalty	(Zheng *et al.*, 2016) transparency of decision-making process	(Scherer and Palazzo, 2011; Stahl and Sully de Luque, 2014; Voegtlin and Scherer, 2017)minimize harm and maximize the benefit for the people and the planet
			(van den Hoven, 2013; Von Schomberg, 2013) socially desirable outcomes; (Wickson and Carew, 2014) ethically desirable outcomes

Table 1. Theoretical background

Open innovation	Responsible innovation	Crowdfunding qualifiers connecting to value Co-creation
Inbound	Inclusion	(Chu *et al.*, 2019; Cillo *et al.*, 2019; Troise *et al.*, 2021) Diversity of crowd; differentiated inputs; knowledge capture
		(Paschen, 2017; Laffey *et al.*, 2021) problem validation; product validation
		(Russo-Spena and Mele, 2012; Quero *et al.*, 2013, 2017) co-design; co-ideation
		(Cumming and Hornuf, 2018) reward-based; investment-based; donation-based; lending-based
	Reflexivity	(Laffey *et al.*, 2021; Zheng *et al.*, 2016; Eiteneyer *et al.*, 2019) transparency of decision-making process; entrepreneur-crowd relationship; lower bureaucracy
		(Flipse *et al.*, 2013; Sykes and Macnaghten, 2013; Wynne, 2011) changing balance of power; recognize drivers for decision-making; principal-agent theory; social media and networking
	Anticipation	(van den Hoven, 2013; Owen *et al.*, 2013) risk-sharing; identifying new opportunities of innovation; diversifying alternatives
		(O'Mahony and Lakhani, 2011; Boudreau and Lakhani, 2013; King and Lakhani, 2013)collective action extend bounded rationality
		(Flipse *et al.*, 2013; Schuurbiers, 2011; Sykes and Macnaghten, 2013; Wynne, 2011) identify and clarify socio-ethical impacts
	Responsiveness	(Wickson and Carew, 2014; Stahl, 2013; De Jong *et al.*, 2015) social media; customer feedback
		(Cillo *et al.*, 2019) dynamic integration of resources
		(Schaltegger and Wagner, 2011) collaboration within sustainable innovation ecosystem; stakeholder engagement; performance evaluation perspective
Outbound	Inclusion	(Russo-Spena and Mele, 2012; Quero *et al.*, 2013, 2017) co-testing, co-launch; co-evaluation; co-consumption
		(Paschen, 2017; Laffey *et al.*, 2021) market validation; product validation, customer feedback
	Reflexivity	(Sykes and Macnaghten, 2013; Eden *et al.*, 2013) earn public support for outcomes
		(Mollick, 2014)assess social desirability of alternatives and outcomes
	Anticipation	(Gierczak *et al.*,2016; Chu *et al.*, 2019; Quero *et al.*, 2017)co-testing; co-consumption; redistribution; modification; open-source system
		(Owen *et al.*, 2013; Stilgoe *et al.*, 2013)contribute to socially desirable outcomes
		(Mollick, 2014) expand capacity for change; customer feedback
	Responsiveness	(van den Hoven, 2013; Von Schomberg, 2013) socially desirable outcomes; (Wickson and Carew, 2014) ethically desirable outcomes
		(Bitzer and Geishecker, 2010; Olson and Rosacker, 2013) high-quality outcomes
		(Wickson and Carew, 2014; Zwart *et al.*, 2014; Von Schomberg, 2013) competitive advantage; diminished restriction for external use

Table 2.
Qualifiers generation based on initial coding

for article inclusion, i.e. articles must be peer-reviewed, except books, book chapters and conference proceedings, resulting in 1,652 papers. All non-English papers, earlier literature reviews and special issue editorials were also ignored (See Table 3). Additionally, works published in journals must be indexed in the Social Science Citation Index (SSCI). According to prior studies, these selections are justified because they ensured the identification of the most relevant articles about the subject under study (Natalicchio *et al.*, 2017; Thomas and Gupta, 2022a, b). It resulted in 1,255 articles. Only management and business-related areas were considered for this review, resulting in 535 articles. All duplicate studies were spotted and

Criteria	Inclusions	Exclusion
Articles	- Qualitative, Quantitative and high-quality conceptual and theoretical articles	- Review papers - Special issue editorial
Research focus	- The research goal was to analyze responsible open innovation in the context of value co-creation and crowdfunding	- Papers that did not examine responsible open innovation were not considered
Publication Type	- Social science citation indexed(SSCI) papers - High-quality journal articles - Peer review	- Papers that are not a part of Social science citation indexed(SSCI - Exclude book - Non peer review - Conference Proceedings - Book chapters - Thesis

Table 3.
Inclusion and exclusion criteria

eliminated. Additionally, those articles that focused on empirical research employing econometric techniques, case studies, investigations, experiments, ethnographic research and high-quality conceptual papers were included. After reading all the titles, keywords and abstracts, 172 papers focused on OI and RI were selected for this research. Finally, 27 papers that are based on dimensions related to responsible OI were selected for the study.

The sample of articles resulting from the selection was published between 2017 and 2022, with the highest number of papers (59%) published in 2019 and onwards (see Figure 1). Our investigation, therefore, seems timely since there seems to be an increasing number of papers related to our research topic, also considering that we already have seven percent (7%) of papers on our research topics in just a few months in the current year 2022. Figure 2 offers an overview of the journals in which the papers of our sample were published. It highlights that CF, open-innovation and RI dimensions have been present in some of the top international journals presenting significant impact factors. Specifically, *Technological Forecasting and Social Change* published the highest number (11%) of papers. It also emerges that the topic of RI concerning CF and OI is addressed in those journal that focuses on innovation and technologies, business and management, but are also transversal in journals focusing on

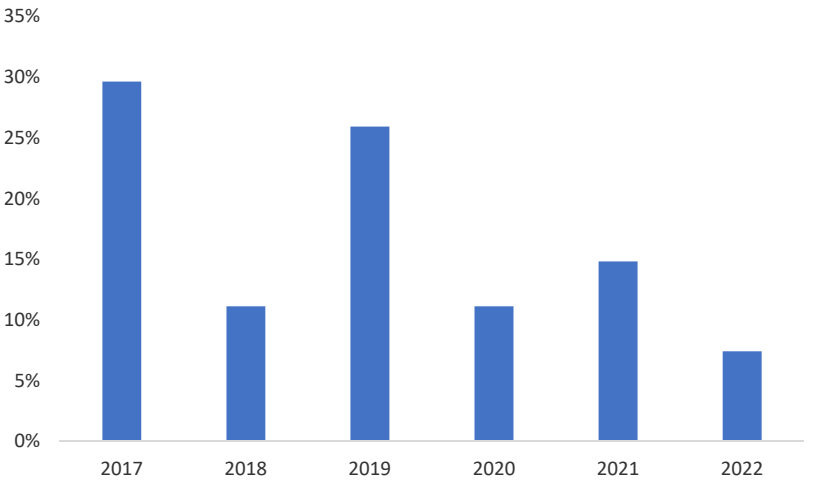

Figure 1.
Distribution of papers per year of publication

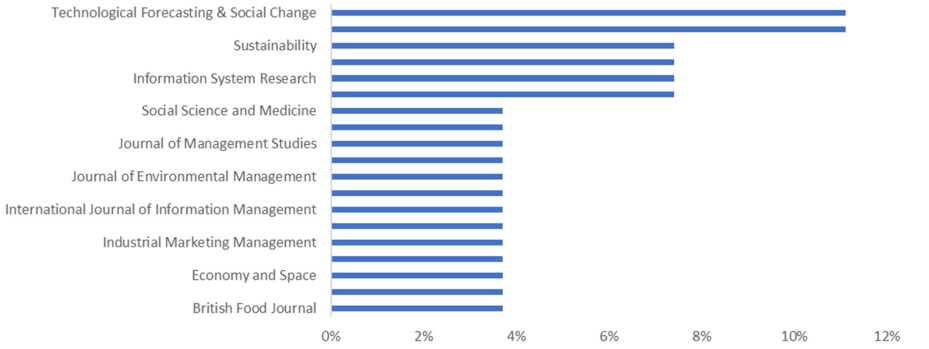

Figure 2.
Distribution of papers per journal

sustainability, environmental management, spatial economics and health and food (see Figure 3).

In terms of methodology, the majority of papers use qualitative research methods, with a slightly lower number of works using a quantitative approach, while conceptual papers and mixed methods are less commonly developed (see Figure 3).

4. Literature findings

As explained in the "Theoretical background" section, we classified and discussed our literature findings with reference to four main categories of analysis related to the dimensions of RI: anticipation, reflexivity, inclusion and responsiveness (see Figure 1). Since some papers have factors that could refer to more than one category, we decided to assign those articles to multiple classification categories. The following sections categorize the papers identifying the main research domains and subtopics that compose each category. In Table 4, we schematize the key results emerging from each section in terms of research methods, overall synopsis of research, research gaps and representative references.

4.1 Anticipation

As previously explained, the anticipation dimension of RI refers to the future-gazing capacity of open-innovation actors. It does not merely refer to predicting future scenarios but also to shaping desired situations and organizational resources to actively achieve the anticipated developments (Stilgoe *et al.*, 2013). Therefore, anticipation recognizes uncertainties and uses

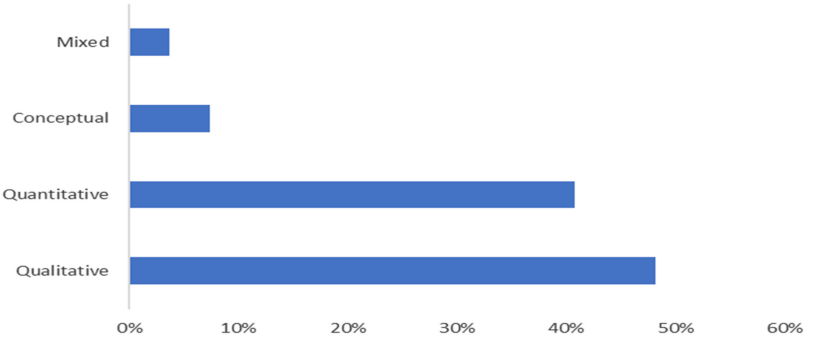

Figure 3.
Distribution of papers per methodology

Anticipation	
Research methods	Qualitative (40%) quantitative (60%)
Overall synopsis of research	- driven exchanges and customers' participation and co-development processes are important for promoting innovation in crowdfunding - importance of visioning, sense-making and business modeling as opportunity identification in CF processes - visioning could be developed in crowdfunding as open and collective abilities to articulate opportunity through identification of values and exchanges of knowledge about future scenarios
Research gaps	- substantial lack of literature explicitly investigating foresighting and visioning methods in relation to both crowdfunding, open-innovation and responsible innovation - the anticipation dimension is often indirectly addressed and not explored in depth
Representative references	Eiteneyer *et al.* (2019), Fehrer and Nenonen (2020), Gleasure *et al.* (2019), Lorne (2020), Stanko and Henard (2017)
Reflexivity	
Research methods	Qualitative (36,5%), quantitative (45,5%), mixed (9%) and conceptual (9%)
Overall synopsis of research	- Sustainability-orientation and contribution to social/ethical key issues could constitute a significant competitive advantage for open-innovation projects - important role of knowledge exchanges between investors and project proposers to reinforce awareness, social engagement and promote critical approach to evaluation of CF projects - CF could be a tool for open-innovation ecosystems for local development (also in relation to smart cities) triggering critical exchanges and knowledge sharing, with reference to sustainable development goals - Cf can facilitate the remobilization of idling resources and co-creation of value, sharing of knowledge and idea and gathering several knowledge-based, non-financial resources for social entrepreneurship
Research gaps	scarce literature on codes of conducts and ethical assessment of open-innovation processes in crowdfunding
Representative references	Dilger *et al.* (2017), Renwick and Mossialos (2017), Troise *et al.* (2021), Wang and Deng (2017), Care *et al.* (2018), Hong and Ryu, 2019, Fuster Morell *et al.* (2020), Lorne (2020), Lenart-Gansiniec (2021), Rosienkiewicz *et al.* (2022) and Chandna (2022)
Inclusion	
Research methods	Qualitative (57%), quantitative (14%) and conceptual (29%)
Overall synopsis of research	- diversity in the demographic of backers facilitate value co-creation - knowledge of the platform stakeholders can improve the quality of ideas in knowledge exchanges processes and open-innovation performance is positively related to the networking ability of project proposers - organizational barriers (e.g. resource and trust gaps, information gaps) might hinder meetings, exchanges and involvement of external actors and investors - potential bridges to overcome barriers to participation are related not only to improved communication, but also to a wider crowd-stratification and a better knowledge of the investors' expertise and network achievable through a detailed mapping of investors
Research gaps	scarcity of literature on power imbalances in crowdfunding ecosystems
Representative references	Chu *et al.* (2019), Chen (2018), Di Pietro *et al.* (2021), Eiteneyer *et al.* (2019), Kwak *et al.* (2018), Murthy and Madhok (2021), Nucciarelli *et al.* (2017)

(*continued*)

Table 4.
Summary of research findings

Responsiveness	
Research methods	Qualitative (40%), quantitative (60%)
Overall synopsis of research	- information flows and storytelling are relevant in the whole crowdfunding process, i.e. in the pre-campaign, campaign and after-campaign phases also as legitimacy-building and accountability tools of the CF project - the continuous exchange of official and unofficial information between project proposers and backers (mainly through social media) is a key factor in the quest for transparency and legitimacy in crowdfunding initiatives - backers have significant power in constructing a positive or negative public image of a project and in legitimizing or delegitimizing a crowdfunding initiative, thus also exposing an inherent fundamental vulnerability of crowdfunding projects - social identity and personal transparency as significant determinants of users' behaviors that support project's development
Research gaps	Scarcity of research related to open-innovation mechanisms and processes in the after-campaign phases; lack of research on changes implemented as response to feedbacks from the members of the CF open-innovation ecosystems in the after-campaign phases
Representative references	Gegenhuber and Naderer (2019), Feller *et al.* (2017), Hashim *et al.* (2017), Gleasure *et al.* (2019), Troise *et al.* (2020)

Table 4.

methods of foresigh, visioning, horizon scanning, vision assessment and scenario planning to anticipate future developments (Grin and Grunwald, 2000; Robinson, 2009; Selin, 2011).

There is a substantial lack of literature explicitly investigating foresight and visioning methods in relation to both CF, OI and RI. In our sample, this link is present but often indirectly addressed and not explored in depth (Fehrer and Nenonen, 2020; Gleasure *et al.*, 2019; Lorne, 2020), hinted to in relation to market pretesting and feedback exchanges related to the proposed product (Stanko and Henard, 2017) or investigated as part of the dialog, shared meaning and value identification process involving project proposers, communities and other relevant stakeholders (Troise *et al.*, 2020). Eiteneyer *et al.* (2019) focus on community-driven exchanges and customers' participation and co-development processes for innovation through CF. A more articulated investigation on these topics is partially made by Fehrer and Nenonen (2020) in their research on the features of open active networks structure in the beginning stages of CF projects. Indeed, they identify the importance of visioning, sense-making and business modeling as opportunity identification, arguing that they could be developed in CF as open and collective abilities to articulate opportunity through identifying values and exchanges of knowledge about future scenarios.

4.2 Reflexivity

The reflexivity dimension of RI is related to the capacity of committing to projects and activities that express specific value systems and theories, to be able to reflect on such activities with a critical approach and to scrutinize institutional practices based on ethical values.

With reference to our literature sample, several papers of our research sample could be included in this category since they are related to social challenges encompassing ethical judgments, such as sustainability, energy use, local development and social entrepreneurs. More specifically, dimensions of reflexivity are present in particular in the CF literature on OI related to (1) sustainability-related projects or projects related to important social challenges (such as health, food and energy); (2) local development reflection, also in relation to urban development, smart cities and support of CF to local development projects namely through civic CF initiatives; 3) social or socially oriented entrepreneurship.

The first stream of research focuses on the role of CF to promote OI in sustainability-related topics or projects related to crucial sustainability areas such as energy or health (Dilger *et al.*, 2017; Renwick and Mossialos, 2017; Troise *et al.*, 2021; Wang and Deng, 2017). Wang and Deng (2017) investigate environmental conservation and energy use concerning residents' living status and satisfaction and their willingness to support CF projects, calling for creating more space for individual commitment in environmental-related CF projects. Troise *et al.* (2021) investigate CF and OI in equity crowdfunding (ECF) projects in the agri-food sector, with a specific focus on highlighting how ECF could represent a valuable source of inputs related to knowledge development to support sustainability-oriented innovation in this field. Their results reinforce previous studies on how sustainability could be a significant competitive advantage for sustainable open-innovation projects and demonstrate how crowd influences the innovation path of agri-food projects, highlighting the knowledge-based inputs crowd can bring to foster economic, environmental and social sustainability objectives. Dilger *et al.* (2017) reflect on the role of crowdfunding (in particular ECF) as an open-innovation tool for energy cooperatives, demonstrating through a multiple-case study analysis that CF could be particularly suitable as part of the business model of energy cooperatives since exchanges between cooperative and crowd could bring positive inputs in the way the energy cooperatives address sustainability and other challenges. The economic risks and benefits of crowdfunding for the health sector are analyzed in Renwick and Mossialos's (2017) paper concerning projects for covering health expenses, raising funds for health initiatives and research and financing commercial health innovation. Although their study demonstrates that economic risks of health-related crowdfunding initiatives may hinder health-related crowdfunding initiatives, they point to the important dimensions of knowledge exchanges between investors and project proposers and reinforce awareness, social engagement and accountability.

The second stream of research has addressed the role of OI through crowdfunding in local sustainable-development projects (e.g. concentrating on smart cities and urban development) also through a more specific focus on civic crowdfunding initiatives (Care *et al.*, 2018; Fuster Morell *et al.*, 2020; Hong and Ryu, 2019; Lenart-Gansiniec, 2021; Lorne, 2020). In these contributions, CF is identified as a tool for creating open-innovation ecosystems between citizens, private entities and local governments that could trigger positive knowledge-sharing mechanisms for civic projects (Hong and Ryu, 2019). It is also described as a viable tool for smart cities development, in which citizens could be engaged with local authorities to develop community services related to smart development, thus turning cities into drivers of OI and entrepreneurship (Care *et al.*, 2018). The role of CF platforms to create open-innovation ecosystems in civic crowdfunding initiatives is also explored in relation to sustainable development goals (Fuster Morell *et al.*, 2020). However, potential shortcomings of CF and OI in urban economic projects are also addressed (Lorne, 2020): Lorne points out how open-innovation ecosystems for social innovation are intersecting with austerity localism and how co-creation and crowdfunding are often masking new modes of state withdrawal (Lorne, 2020). Starting from the assumption that local governments are under pressure in a rapidly changing environment, Lenart-Gansiniec (2021) investigates how crowdfunding could foster organizational learning in local governments. The results of this study indicate that while crowdfunding has a positive impact on organizational learning, crowdfunding is not automatically related with organizational learning in local governments (Lenart-Gansiniec, 2021).

Finally, the last stream of research addresses OI through crowdfunding for social entrepreneurship projects (Rosienkiewicz *et al.*, 2022). Rosienkiewicz *et al.* (2022) investigate students' readiness to OI-based platforms for social product development and sharing economy and finds that students still have a passive attitude towards these tools, based both on a lack of knowledge about the OI paradigm and a lack of trust in these paradigms of

development. Chandna (2022) focuses on the relationship between crowdfunding, OI and social entrepreneurship, arguing that crowdfunding digital platforms can facilitate the remobilization of idling resources and co-creation of value, the sharing of knowledge and ideas and gathering several knowledge-based, non-financial resources.

4.3 Inclusion

The inclusion dimension of RI refers to the inclusion of diverse voices in innovation processes, focusing on processes of stakeholders' involvement, multi-stakeholder partnership arrangements and governance composition.

With reference to our research sample, we included in this category the papers that address the demographic composition of backers in CF open-innovation initiatives (Chu *et al.*, 2019; Nucciarelli *et al.*, 2017), the mapping of innovation ecosystem components (Kwak *et al.*, 2018) and papers that focus on mechanisms of inclusion and participation of stakeholders or more specifically investors (Chen, 2018), organizational barriers (Di Pietro *et al.*, 2021; Eiteneyer *et al.*, 2019) and factors determining participation in crowdfunding open-innovation ecosystems (Murthy and Madhok, 2021).

With reference to the first stream of research, Chu *et al.* (2019) carry out a conceptual analysis of crowdfunding in relation to OI and value co-creation. They analyze different mechanisms of value co-creation, namely diversity, knowing and networking, highlighting that diversity in the demographic of backers facilitates value co-creation, that knowledge of the platform stakeholders can improve the quality of ideas in knowledge exchange processes and that OI performance is positively related to the networking ability of project proposers.

In the second stream of research, backers' inclusion and involvement are analyzed in terms of drivers of participation, inclusion and involvement (Eiteneyer *et al.*, 2019) and factors determining a varied ecosystem emergence (Murthy and Madhok, 2021). Finally, the topic of inclusion is also investigated in terms of organizational barriers that might hinder meetings, exchanges and involvement of external actors and investors and the potential bridges to overcome these barriers (Di Pietro *et al.*, 2021). Organizational barriers are mainly related to resource and trust gaps, as well as information gaps; potential bridges are also related not only to improved communication but also to a broader crowd-stratification and a better knowledge of the investors' expertise and network achievable through a detailed mapping of investors (Di Pietro *et al.*, 2021).

4.4 Responsiveness

The responsiveness dimension of RI relates to the ability of innovation systems and projects to be responsive to changing scenarios and transparent and accountable to the actors involved to implement the necessary changes, policy measures and adaptation mechanisms to provide relevant answers to emerging challenges.

With reference to our literature, papers that could be included in this category are those that explore legitimacy mechanisms for crowdfunding projects and information flows (Gegenhuber and Naderer, 2019; Troise *et al.*, 2020), also as a means for transparency and accountability, influencing backers' behaviors (Feller *et al.*, 2017; Gleasure *et al.*, 2019; Hashim *et al.*, 2017), as well as the feedback influence on CF projects' implementation.

Gegenhuber and Naderer (2019) argue that information flows are relevant throughout the whole crowdfunding process, i.e. in the pre-campaign, campaign and after-campaign phases. They point out that this is related to the legitimacy dimension of the CF project, and it is a tool to control the inherent uncertainty of the entrepreneurial endeavor. Storytelling certainly plays a role in this process. The continuous exchange of official and unofficial information between project proposers and backers (mainly through social media) is a key factor in the quest for transparency and legitimacy in crowdfunding initiatives. Feller *et al.* (2017) focus on

information sharing in peer-to-peer lending systems, identifying social identity and personal transparency as significant determinants of users' behaviors that support the project's development. Gleasure *et al.* (2019) approach mechanisms of crowdfunding control from the point of view of informal social media discourse. The research demonstrates the power of backers in constructing a positive or negative public image of a project and in legitimizing or delegitimizing a crowdfunding initiative, thus also exposing an inherent fundamental vulnerability of crowdfunding projects.

On the basis of the systematic literature review and key findings, the authors propose a comprehensive conceptual model based on the theme under study (see Figure 4). The author(s) also derived propositions that could guide future researchers/scholars in this direction.

Proposition 1. The greater the adoption of Inclusion and transparency of decision-making (Inbound OI) in the pre-funding phase of CF during co-ideation, the greater the socially desirable outcomes of the CF project.

Proposition 2. The greater the adoption of Reflexivity and problem validation (Inbound OI) in the pre-funding phase of CF during co-production phase, the greater the success of the CF project.

Proposition 3. The greater the adoption of Anticipation and product validation (Inbound OI) in the pre-funding phase of CF during co-testing, the greater the socio-ethical impact of the CF project.

Proposition 4. The greater the adoption of Responsiveness and the problem validation (Inbound OI) in the pre-funding phase of CF during co-launch, the greater the marketability and economic value of the CF project.

Proposition 5. The greater the adoption of Inclusion and customer feedback (Outbound OI) in the post-funding phase of CF during co-launch/co-consumption, the greater the socially desirable outcomes of the CF project.

Proposition 6. The greater the adoption of Reflexivity and assessment of alternatives and outcomes (Outbound OI) in the post-funding phase of CF during co-production/co-experiencing, the greater the success of the CF project.

Proposition 7. The greater the adoption of Anticipation and expanding capacity for change (Outbound OI) in the post-funding phase of CF during co-testing/co-launch, the greater the socio-ethical impact of the CF project.

Proposition 8. The greater the adoption of Responsiveness and the target for high-quality outcomes (Outbound OI) in the post-funding phase of CF during co-launch, the greater the marketability and economic value of the CF project.

5. Conclusion and future research directions

This paper investigates the intersection between crowdfunding, OI and RI and identifies the emerging trends and gaps of research and new paths for crowdfunding research in the future. In this vein, discussion of the results assessed OI and co-creation of value literature developed in crowdfunding contexts and systematized it according to the different dimensions of RI. More specifically, we classified and discussed our literature findings with reference to the four main categories of analysis related to the dimensions of RI – anticipation, reflexivity, inclusion and responsiveness – adopting the model introduced by Stilgoe *et al.* (2013) as a theoretical milestone.

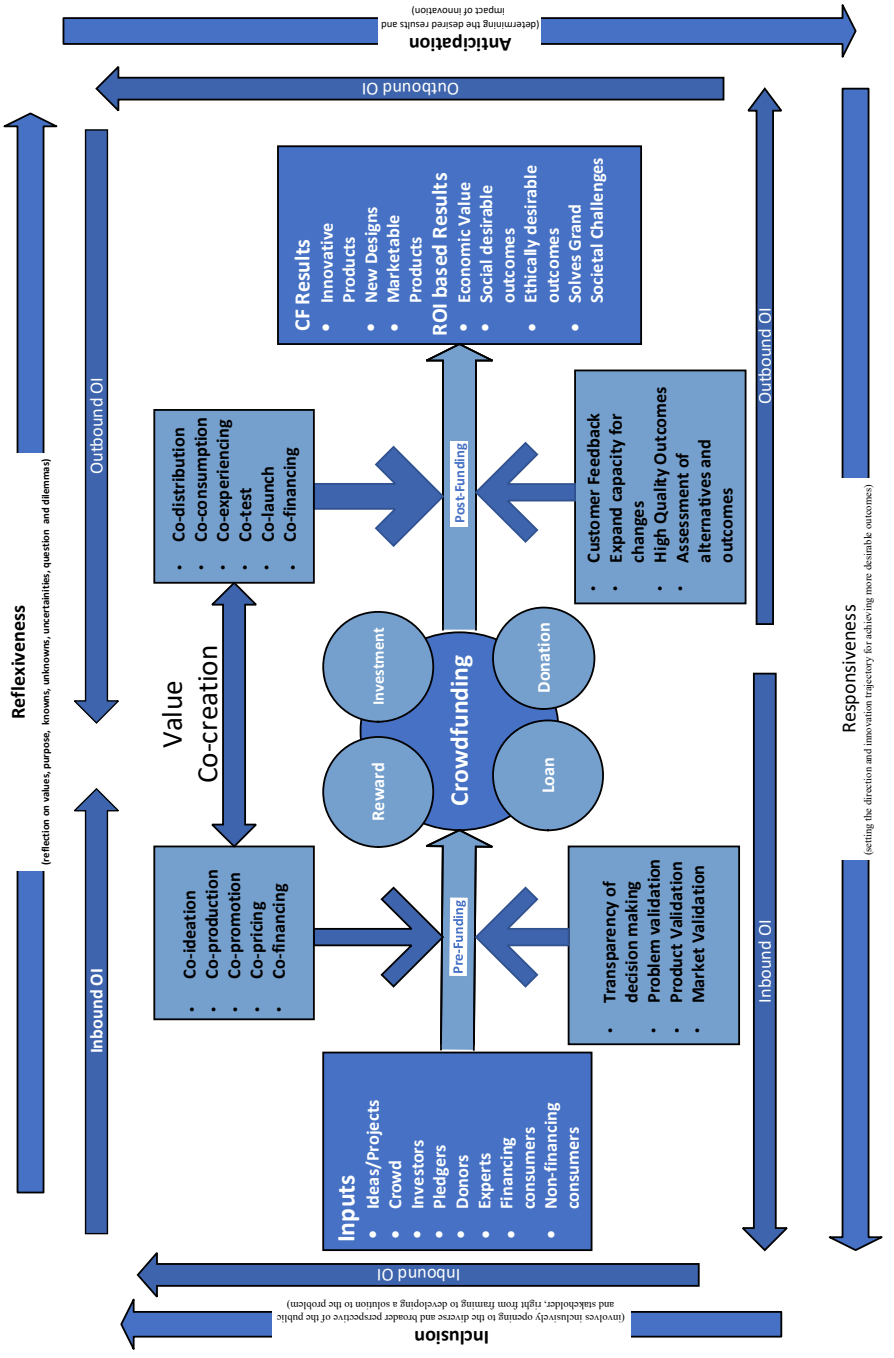

Figure 4.
Conceptual framework

By compiling, examining and evaluating the vast body of literature regarding crowdfunding, value co-creation and OI, we did find repeating patterns and essential areas of convergence or divergence with RI.

According to our descriptive results, crowdfunding, open-innovation and RI dimensions have been present in several top international journals presenting significant impact factors. Therefore, it could be conceived as an emerging hot topic.

However, due to its multidisciplinary nature, the scientific literature on the role of crowdfunding in endorsing responsible OI for shared value co-creation appears fragmented and redundant.

With regard to *anticipation* as the capacity to shape desired situations and organizational resources to actively achieve the anticipated developments (Stilgoe *et al.*, 2013), there is a substantial lack of literature explicitly investigating, foresight and visioning methods in relation to both crowdfunding, value co-creation and OI.

At the same time, the scarcity of papers adopting a qualitative research design leads to a lack of consensus regarding the conceptualization of this dimension. For example, the anticipation dimension is often indirectly addressed and not explored in depth (Eiteneyer *et al.*, 2019; Fehrer and Nenonen, 2020; Gleasure *et al.*, 2019; Lorne, 2020; Stanko and Henard, 2017). In this vein, further qualitative studies are needed.

With regard to *reflexivity* as the capacity of committing to projects and activities that express specific value systems and theories, to be able to reflect on such activities with a critical approach and to scrutinize institutional practices based on ethical values, we did find that sustainability-orientation and contribution to social/ethical key issues could constitute a significant competitive advantage for open-innovation projects in a crowdfunding context. According to this view, several scholars (Christmann and Taylor, 2002; Ottman *et al.*, 2006) analyze how firms are modifying their orientation towards RI and adopting responsible corporate behavior as a result of the increasing pressure that they are facing from their stakeholders, including governments and nongovernmental organizations (NGOs). However, we did find a few studies about strategies and tools to manage ethical assessment of open-innovation processes in crowdfunding.

We did also find that the knowledge exchanges between investors and project proposers could reinforce awareness, social engagement and promote critical approach to evaluation of CF projects (Care *et al.*, 2018; Chandna, 2022; Dilger *et al.*, 2017; Fuster Morell *et al.*, 2020; Hong and Ryu, 2019; Lenart-Gansiniec, 2021; Lorne, 2020; Renwick and Mossialos, 2017; Rosienkiewicz *et al.*, 2022; Troise *et al.*, 2022; Wang and Deng, 2017). This confirms that knowledge sourced from engagement with internal and external stakeholders contributes to RI orientation. Moreover, we did find that CF could be a tool for open-innovation ecosystems for local development (also in relation to smart cities), triggering critical exchanges and knowledge sharing with reference to sustainable development goals. This collaboration with external and internal stakeholders for the purpose of sharing knowledge and resources for innovation management (Faems *et al.*, 2005), results in continuous, purposive inflows and outflows of knowledge that bring the dual advantages of accelerating internal innovation while expanding markets for the external use of the innovation. Therefore, knowledge sharing comes to play a central part in determining the success of OI practices. In line with this, Boer (2005) states that knowledge sharing is indispensable in order to obtain a collective outcome from collaboration in an OI environment. Innovation is a social process and it is only through the people that participate in collaborations that firms can achieve the benefits of innovation (Carayannis *et al.*, 2017). Boer (2005) further declares that the participants should share knowledge, since it is their part of responsibility in such collaborations, but this does not always happen in reality. Since knowledge sharing by and large is a relational process, it is of interest to investigate what factors may affect knowledge sharing from the participants' perspective by a qualitative approach.

With regard to the capacity to include diverse voices in innovation processes, focusing on processes of stakeholders' involvement, multi-stakeholder partnerships arrangements and governance composition, a research gap emerging from the literature is related to the power imbalances in crowdfunding ecosystems.

At the same time, the lack of papers adopting a quantitative research design leads to several gaps about the operationalization of the main dimensions of crowdfunding as a tool to enhance co-creation of shared value and RI. Qualitative research designs do not allow generalization of results and therefore reduce the impact of theoretical and managerial implications of the studies. This leads us to argue that the lack of quantitative research carried out on large samples also compromises the advancement of knowledge on antecedents, mediating factors, moderating factors and impacts of the phenomenon.

Through the main synopsis of research, we did find that diversity in the demographic of backers facilitates value co-creation. This confirms that companies highly engaged in diversity policies exhibit better organizational performance than companies that are poorly engaged (Cillo *et al.*, 2022). Moreover, we observed that organizational barriers (e.g. resource and trust gaps, information gaps) might hinder meetings, exchanges and involvement of external actors and investors. In this vein, we suggest future research should further develop the concept and dimensions of knowledge hiding.

With regard to the responsiveness dimension, literature systematization allows some strategic considerations for future research. In order to set the direction and innovation trajectory for achieving more desirable outcomes, information, flows and storytelling are relevant in the whole crowdfunding process, i.e. in the pre-campaign, campaign and after-campaign phases as well as legitimacy-building and accountability tools of the CF project.

In addition, social identity and personal transparency are significant determinants of users' behaviors that support the project's development. In this vein, further micro-level studies are needed to understand the individual perspectives of the actors involved (Bercovitz and Feldman, 2008; Miller *et al.*, 2018) and technology entrepreneurs (Guerrero *et al.*, 2018; Hayter *et al.*, 2017; RezaeiZadeh *et al.*, 2017; Watson *et al.*, 2018).

5.1 Implications and limitations

Coming from the RI management standpoint, our research has focused on the crowdfunding phenomenon interpreted as an open process of value co-creation.

The main contribution is the advancement of knowledge about the intersection between crowdfunding, OI and RI. The literature analysis carried out in this contribution also brings further insights into the literature on success factors and signals by grouping, summarizing and relating its main papers to the topic of responsible OI.

This study also offers several practical suggestions as well as policy implications for improving crowdfunding as social innovation practice. The co-creation of value provided by crowdfunding platforms corroborates studies on shared value and lays the foundation for new research on digital tools to strengthen local development.

Further theoretical and practical implications relate to the economics and management of social enterprises, naturally devoted to the creation of economic and social value. CF could be a good tool for social enterprises to overcome problems related to financing, information asymmetries, small average investments and local dimension.

In short, this systematic review offers novel implications, a future agenda and propositions for the field; however, some limitations can be detected in the analysis that can lead to further research developments. First, the authors only included peer-reviewed English-language articles published in SSCI journals: as a result, it is possible that relevant studies have been overlooked. Second, only the Web of Science database was reviewed: in

future steps of the research other databases (such as Scopus or Ebsco) could be included. Finally, it could be relevant to ascertain and validate the proposed model in future research using the eight propositions as testable hypotheses. There will be opportunities to carry out such studies in the context of reward, investment, donation and loan-based platforms.

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