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ABSTRACT:

The aim of this study is twofold. First, the research aims to identify Integrated Thinking (IT) stages of development. Second, the research aims to investigate how IT has reacted to the COVID-19 pandemic by accelerating integrated CSR practises.

The study employs a case study on an Italian multi-utility company, Iren Group. The research method uses triangulated data collected from semi-structured interviews and archival materials and it analyses data with a top-down and bottom-up coding procedure. This allows us to inductively develop a model of IT stages of development and CSR strategic postures as response patterns to the COVID-19 pandemic.

The research identifies the developmental paths of IT initiation, IT reactiveness, and IT implementation responding to changes and challenges in times of crisis. Furthermore, the research provides stimuli for recovery to overcome periods of crisis through three main CSR strategic postures: stakeholder engagement, flexible proactiveness and democratic durability.

CUST_RESEARCH_LIMITATIONS/IMPLICATIONS__(LIMIT_100_WORDS) :No data available.

The research suggests that managers can adopt stakeholder engagement, flexible proactiveness and democratic durability as CSR strategic postures in order to integrate CSR practises into the companyâ€™s DNA and overcome periods of crisis.

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Design/methodology/approach: The study employs a case study on an Italian multi-utility company, Iren Group. The research method uses triangulated data collected from semi-structured interviews and archival materials and it analyses data with a top-down and bottom-up coding procedure. This allows us to inductively develop a model of IT stages of development and CSR strategic postures as response patterns to the COVID-19 pandemic.

Findings: The research identifies the developmental paths of IT initiation, IT reactiveness, and IT implementation responding to changes and challenges in times of crisis. Furthermore, the research provides stimuli for recovery to overcome periods of crisis through three main CSR strategic postures: stakeholder engagement, flexible proactiveness and democratic durability.

Originality/value: This is among the first studies that analyses how IT acts during a crisis in the multi-utility sector. There are three main stages of development, i.e., IT initiation, IT reactiveness and IT implementation, which are characterised by stakeholder engagement, flexible proactiveness, and democratic durability.

Practical implications: The research suggests that managers can adopt stakeholder engagement, flexible proactiveness and democratic durability as CSR strategic postures in order to integrate CSR practises into the company's DNA and overcome periods of crisis.

Keywords: COVID-19 pandemic; Integrated Thinking; Integrated CSR; stakeholder engagement; circular economy, multi-utility sector.

Jel Codes: M14 - M40 - M41

1. Introduction

"The crisis of the COVID-19 pandemic has underscored the interconnected nature of our lives and the differential effects on individuals, organizations, and societies, as well as their responses to the crisis" (Bapuji *et al.*, 2020; p. 1072). This pandemic has quickly reached different parts of the globe, resulting in severe consequences for our health, wellbeing, and the worldwide economy. It has revealed the essential interdependence of business and society (Bapuji *et al.*, 2020). However, every cloud has a silver lining, thus, during periods of crisis, businesses are required to navigate through them by turning challenges into opportunities (Freeman, 2020; Carroll, 2021a, Carroll, 2021b). This unforeseen and unprecedented event is no different. The silver lining in this uncertainty is the opportunity to rethink companies' business models (Crane and Matten, 2021; De Massis and Rondi, 2020) with an Integrated Corporate Social Responsibility (CSR) approach (Freeman et al., 2010). Integrated CSR is the approach that includes economic, financial, ethical, social and environmental objectives into the decision-making process of companies with the aim to create value for and with stakeholders (Freeman et al., 2010). There are several constructive forces that can bring integrated CSR practises into companies' focus: for instance, customers, and society at large, have become sensitive to these topics and governments and financial institutions are supporting businesses with post-COVID-19 EU reconstruction programmes (e.g., Next Generation EU).

In this context, businesses are called to integrate CSR and sustainability initiatives into their business models and cooperatively work together (Waddock, 2004; Waheed and Zhang, 2020), in order to enhance cross-level interactions among intra-individual, intra-organisational, and extra-organizational factors of CSR (Aguinis and Glavas, 2019). Furthermore, responding to societal challenges (Aguilera *et al.*, 2007) requires an inclusive and iterative process of decision-making, managing, and reporting of the interrelations between financial, economic, social, environmental and ethical issues at the core of the business strategy (Busco et al., 2017; Di Vaio et al., 2021; Herath et al., 2021).

In the literature stream of sustainability accounting and management, this approach is labelled as Integrated Thinking (IT) and refers to "decision-making, management and reporting processes of businesses' value creation (Devalle *et al*., 2021; Dumay and Dai, 2017; Oliver et al., 2016). Prior literature on IT has investigated the role of corporate strategies (Leleux and Van der Kaaij, 2019), management control systems (Dimes and de Villiers, 2021), and organisational culture (Dumay and Dai, 2017) in shaping IT mechanisms, consequently favouring sustainable development. Sustainable business models require that corporate strategy, decisions and reporting processes are integrated with an IT approach, however, there is the need to better understand the role of IT on the realisation of CSR and sustainable business models (Di Vaio et al., 2021). Furthermore, business models need to become more resilient to epidemic shocks by innovating the value proposition and value creation with CSR practises. Relatedly, academics (Schaltegger, 2021) call to analyse CSR practises and sustainable business models in times of crisis to be more resilient to epidemic shocks.

Inspired by these research gaps (Di Vaio et al., 2021; Schaltegger, 2021), the study addresses the IT approach related to CSR and sustainability practises in the multi-utility sector. This sector has been chosen as the context of this research investigation because it plays a bivalent role to foster sustainable development and to stimulate sustainability transitions to other companies (Paolone, Sardi, Sorano, and Ferraris, 2021).

The aim of this study is twofold. First, the research aims to identify the IT stages of this development. Second, the research aims to investigate how IT has reacted to the COVID-19 pandemic by accelerating integrated CSR practises. To achieve these objectives, a case study on a multi-utility company, Iren Group (Iren) has been carried out. Iren is located in the North West of Italy and has adopted an IT approach toward a green transition which can serve as learning lessons for other companies operating in the same sector. More specifically, an IT approach along with joint objectives and mutual coordination with stakeholders can mitigate the negative effects and favour resilience

during a crisis period.

From a theoretical viewpoint, the study contributes to the IT literature by determining the IT stages of development that evolve over time. From a managerial perspective, this work provides the three main CSR strategic posture linked to IT: stakeholder engagement, flexible proactiveness, and democratic durability that addresses the DNA code of Integrated CSR (Freeman et al., 2010) and CSR 2.0 (Visser, 2011), because they integrate governance, societal/stakeholder collaborations and environmental integrity for sustainable ecosystems at the core of companies' business strategies.

The research proceeds as follows. Section 2 presents the literature on IT and the CSR challenges in the time of COVID-19. Section 3 describes the research design consisting of the subsequent steps: method, case selection, data collection and analysis. Section 4 shows the research findings, then, Section 5 discusses theoretical and practical implications, by developing a model of IT stages of developments and CSR strategic postures for each of the IT phases, before and during the crisis. Section 6 concludes with the research contributions and highlights the limitations of the study and future research directions.

2. Literature review

This literature review analyses prior studies on the implementation of an IT approach as the basis to integrate CSR practises within the core business of companies. Then, it addresses CSR challenges occurring during the pandemic period that can be overcome by adopting an IT approach. Accordingly, Section 2.1 analyses the literature on IT and Section 2.2 contextualises the business sustainability literature in time of COVID-19.

2.1. Integrated Thinking in the value creation process

IT is conceptualised as "the active consideration by an organization of the relationships between its various operating and functional units and the capitals that the organization uses or affects. IT leads to integrated decision-making and actions that consider the creation of value over the short, medium and long term" (International Integrated Reporting Council, 2021) and has been encapsulated as the strategic and managerial mindset which shifts the compartmentation of organisational "silos" thinking to an integrated approach that considers the relationships between different factors affecting the company's value creation processes (International Integrated Reporting Council, 2021). IT addresses strategic, managerial and organisational decision-making processes (Busco et al. 2013; La Torre et al., 2019) and differs from Systems Thinking and Design Thinking for social innovation (Brown and Wyatt, 2010) because it focuses on corporate accountability in the research stream of sustainability management and accounting.

The literature of IT mainly focused on the linkages between IT and business strategies (Leleux and Van der Kaaij, 2019), management control systems (Dimes and de Villiers, 2021), organisational culture (Dumay and Dai, 2017) and Integrated Reporting (IR) (Al-Htaybat and von Alberti-Alhtaybat, 2018). Prior research on IT discussed how this approach can be developed in practice by constructively managing pressures and constraints among the capitals in strategy, resource allocation, performance measurement and control (Oliver et al., 2016). The authors discussed soft versus hard IT approaches to operationalise the wide-ranging presence of indicators of well-being (soft IT) against financial sophistication in KPIs (hard IT). Even with the existence of soft IT within organisations, such an approach is a well-grounded premise for hard IT accountability expectations, which, in turn, once implemented, echo back to soft IT in a circular manner (Oliver et al., 2016). Therefore, this IT approach can lead to the development of IR that improves transparency for stakeholders on the IT approach implemented through the involvement of internal and external drivers in the company (Adams, 2015; Adams, 2017a, Adams, 2017b). This is the reason why IT and IR combine with each other as accountability approaches that connect a company's purpose and business performance in an

integrated manner (Adams and Frost, 2008).

The theoretical fundamentals of IT relate to agency theory, stewardship theory, institutional theory, legitimacy to explain the rationale behind the company's dissemination choices (Di Vaio et al., 2021) and to stakeholder theory to harmoniously link strategic tactics and decision-making with different stakeholders' interests (Devalle et al., 2021). The greater the likelihood of a full consideration of CSR practises and key stakeholders' legitimate interests as part of the ordinary activities of conducting business, the more IT is embedded in the business (Busco et al., 2021). This means that stakeholders' legitimate interests are understood, taken into account, and responded to through decisions, evaluations, actions, dialogue and ongoing communication.

An IT approach defines "how the interests and the contributions of a series of heterogeneous stakeholders are linked into the models of value-creation" (Busco et al., 2017) and is likely to be more proactive to address sustainability challenges and CSR issues (Dmytriyev et al., 2021; Lin et al., 2019). Rinaldi (2020) conceptualised IT as a dynamic process where judgments and choices are influenced and constantly exchanged through active relations with stakeholders. To this regard, the study of Devalle et al. (2021) investigated how stakeholder engagement actions translate IT into practice within a case study. The results delineated IT actions that focus on the structure and the mechanisms of corporate governance, on the strategic posture, performance measurements, communication with and among stakeholders and partnerships with stakeholders in a circular manner. The integrated circularity of communication and partnerships has been delineated as a pragmatic IT approach for value creation. First, complex imbalances and paradoxes when addressing economic, social and environmental matters are common. Thus, their acknowledgment along with the analysis of the context constitute a specific element of IT. Second, dialogue with stakeholders influences decision-making and it contributes to an active learning process and knowledge sharing that involves the company and its stakeholders (Gromis di Trana et al., 2020). Third, based upon knowledge sharing, joint projects with business partners achieve the awareness and the innovation necessary to effectively consider interdependencies among stakeholders' interests which translate IT into action.

Several academic studies suggest that when companies manage internal tensions of multiple capitals and cooperate with stakeholders to deal with sustainability imbalances, they develop an IT attitude aimed at creating sustainable business models (Di Vaio et al., 2021). Recently, sustainable business models have been challenged by the pandemic shock to become more resilient and to reduce negative impacts by innovating their value proposition and value creation process from a sustainability perspective (Schaltegger, 2021).

The role of IT in the implementation of sustainable business models has become worthy of investigation (Di Vaio et al., 2021) especially in order to be more resilient to epidemic shocks (Schaltegger, 2021). Therefore, our research covers these knowledge-practice gaps and focuses on the longitudinal status and the knowledge structure of IT during the COVID-19 pandemic. In order to contextualise our study, in the next subsection we address CSR and sustainability practises challenged by COVID-19. An IT attitude is a relevant precondition to ensure a real and substantial integration of CSR practises within the companies. Therefore, to overcome periods of crisis, it is important to turn CSR issues into Integrated CSR practises through an IT approach. For this reason, in the next section, CSR challenges occurring during the pandemic period are addressed to better contextualise the uncertainties that companies are facing.

2.2. CSR challenges in time of COVID-19

CSR practises, consisting of articulated and communicated policies and initiatives that reflect the business responsibility of companies (Matten and Moon, 2008), have been impacted during past economic crises (Lins, Servaes and Tamayo, 2017; Waddock and Graves, 1997). On the one hand, some academic studies have demonstrated that, in times of crisis, CSR activities paid off these unexpectedly low-trust periods (Lins et al., 2017) because high-CSR firms earned excess returns

relative to low-CSR firms. On the other hand, companies may also cut their spending on CSR projects (Waddock and Graves, 1997) during periods of crisis. Therefore, it is worth considering CSR challenges during the COVID-19 because companies are challenged to address CSR and social concerns and, relatedly, the stakeholder view has been bolstered during the COVID-19 pandemic (Carroll, 2021a; p. 1264).

The unprecedented health crisis of the COVID-19 pandemic has rapidly spread worldwide and has pushed the world economy into a global recession that, according to the International Monetary Fund (IMF), is even worse than the Great Depression in the 1930s and the 2008 Global Financial Crisis. Because of the several waves and related lockdown periods, many companies now face financial instability and difficulties to remain afloat. The COVID-19 pandemic is a reminder of the fragility of our systems because we have witnessed the interruption of production, financial and transportation systems which have been profoundly impacted (Ramos and Hynes, 2020). This crisis has also brought about revelations regarding the understanding of grand challenges such as the biodiversity collapse, climate change, fragilities of societies, racial discrimination, and income inequality (OECD, 2020). The uncertainty deriving from the COVID-19 pandemic has clearly illustrated the rootedness of companies in society, the essential value of stakeholders (Crane and Matten, 2021), and the renewed vigour to manage "responsible business without trade-offs" (Freeman, 2020). There is a need for cooperation among businesses, stakeholders, and governmental and non-governmental institutions alike to act promptly and propose alternative and innovative solutions to today's global issues (Bapuji et al., 2020).

COVID-19 has highlighted the exposure of businesses to societal risks and the fundamental role in addressing them in order to maintain risk-resilience-responsibility in supply chains (Crane and Matten, 2021). For instance, before COVID-19, the exploitation of global value chains was common, However, in current times, localised value chains lead to higher reliability and lower disruption risks (Muzio and Doh, 2020). Therefore, companies are challenged to improve the ability to anticipate, absorb, recover, and adapt to unexpected threats (Cheema-Fox et al., 2020; Ramos and Hynes, 2020) with a re-modulation of their business plans with a CSR-oriented perspective in order to tackle the uncertainty of the crisis and improve health and safety guidelines to workers (United Nations, 2020). During these times, businesses are required to make tough decisions that express their underlying purposes and actual core values to make changes to their business models (Crane and Matten, 2021). More specifically, companies are called upon to implement risk-mitigation strategies and partnerships with other entrepreneurs in order to advocate for financial assistance to secure liquidity. Moreover, businesses must be accountable to a variety of stakeholders and leaders, who are asked to responsibly respond to disruptive changes with a rebalancing of resources, investments in workforce training, and advancements in new models of learning (Crane and Matten, 2021). In fact, phenomena like changes in working habits, such as working from home, as well as alternative business models, must be developed to address such crises and their real and potential consequences.

The pandemic presents opportunities to restructure ways to design, govern, and educate a future which joins financial objectives and CSR practises with an IT logic. In doing so, companies experience higher institutional money flows and fewer negative returns as demonstrated by the recent research of Cheema-Fox et al. (2020). This empirical analysis on a sample of US listed firms has demonstrated that firms protecting its labour force, supply chain and repurposing operations to provide solutions to the crisis increase investor confidence and make the company more resilient to the market shock during the Coronavirus pandemic. Therefore, COVID-19 renews the importance of addressing CSR and sustainability practises in an integrated manner (Carrol, 2021a).

In this context, the multi-utility sector plays an important role in dealing with disruptions and reassuring customers (Sowby, 2020). As stated by Sowby (2020), "with people staying home and being more conscious of hygiene, for example, water use is likely to be higher, peak at different times, and concentrate in residential areas" (p. 1). Moreover, social distancing has impacted on operational processes of thermoelectric production plants to protect on-site workers. For these reasons, we aim

to investigate how this period of profound crisis can serve as a motivation to drive businesses operating in the multi-utility sector toward progressive changes that embrace an IT approach of decision-making, management and reporting with advanced technologies and transformative innovations alongside the imperative need to implement CSR issues into the core business (Carroll, 2021a).

3. Research Design

3.1. Method

As we aim to investigate how the real-life phenomenon of COVID-19 has impacted on IT actions (Devalle et al., 2021) within the context of multi-utilities, this research adopts a case study method (Eisenhardt, 1989; Yin, 2003). Case study research is a scientific methodology used for holistic investigations of a real-life phenomenon within an environmental context (Yin, 2011), thus we interpret IT according to the meanings assigned by the interviewees (Lincoln and Denzin, 2000). This type of research favours the understanding of the meanings, activities, and actions of IT in times of crisis. As our research looked at the path developments of IT in terms of decision making, management, and reporting over time, a case analysis was employed by comparing these issues as events unfolded (Eisenhardt and Graebner, 2007), in order to hone the skills of business managers with a keen understanding of how IT evolves over time. This teases out a model of IT stages of developments and CSR strategic postures of how companies can react through crises. The research method has been developed within the following phases in accordance with Stake (1995): case selection, data collection and analysis. The selection of a case worthy of investigation has followed a pragmatic ground with a problem-centric view (Creswell, 2014) focused on a leading sector that favours sustainability transitions; details are described in Subsection 3.2. Data collection and analysis follow a qualitative approach based on an open-ended strategy of inquiry for data collection and on constructivist perspectives of multiple meanings of individual experiences for data analysis, with the intent of developing a pattern (Creswell, 2014). Detailed explanations of data collection and analysis are provided in Subsection 3.3.

3.2. Case selection

This first preliminary and explorative phase was aimed at collecting relevant cases in the literature on IT, starting from the identification of a relevant sector in which practising sustainability can lead to sustainable transitions. This first screening was contextualised in the multi-utility sector to identify a few targeted firms as fertile grounds of investigation. After a first analysis, the multi-utility sector emerged as a distinctive industry where the operating activities must necessarily tackle socio-economic and environmental concerns, especially during crisis periods. These companies are used to deliver essential services, such as water, electricity, natural gas, telephone service, among others, at a societal level. The investigated multi-utility companies are managed or controlled (directly or indirectly) by public sector agencies. This feature can lead to further considerations on the governments' sensitivity to non-financial matters (Pozzoli and Gesuele, 2016) and it is the consequence of the overlap between ownership and potential "customers". In fact, final users are at the same time the owners (through public agencies) but also the recipients of the services delivered. For this reason, multi-utility companies are naturally oriented to satisfying Environmental, Social and Governance (ESG) needs and disclosing a wide range of information, which gives rise to the observation that stakeholders are extremely careful with regards to the extra-financial performance, the outcomes and the impacts on the community (Pozzoli and Gesuele, 2016). These elements emphasise the relevance of this sector as a good field for the selection of an appropriate case study. Analysing sector studies, Iren highlighted a deeply rooted commitment toward an integrated approach to sustainability issues. The caring of and the engagement with communities in which Iren operates constitutes valuable ingredients for our investigation.

Iren is an Italian multi-utility company with its headquarters in Reggio Emilia and its operational offices in Genoa, Turin, Parma, Piacenza, Reggio Emilia, La Spezia and Vercelli. Iren's origins date back to July 2010 through the merger of Iride and Enìa to gain a leading position in electricity (production, distribution and sale), district heating (production, distribution and sale), gas (distribution and sale), integrated water service management, environmental services (waste collection and disposal) and services for the local authorities. With its 4,275 million Euros in revenues and 8,102 employees in 2019, Iren requires a well-structured organisation with a highly skilled management with expertise on sustainability issues as well as stakeholder engagement practises. Iren operates in 297 cities and 3,057,857 residents are served in environmental services. In this context, innovation is one of the main drivers of Iren's value creation. For instance, the IrenUp programme was launched with the aim of supporting high potential Italian start-ups, enabling them to develop know-how, integrate innovative technologies and services into Iren business and drive innovation in the local area. As stated in the sustainability report, the priority is to enhance services with innovative content, offering new ones to improve the quality of life. Regarding ESG issues, Iren focuses on resources and the responsible use of them. The reduction of the associated environmental impacts is "part of the DNA" of the company and it is evident in the Group's operating results. The aim of these commitments is decarbonisation, expressed through the use of renewable energy sources, the promotion of a more sustainable use of water resources and waste, and a project known as "resilient cities" with the roll-out of district heating helping to improve air quality and promote the energy upgrading of buildings and public street lighting. Furthermore, Iren has received an award for its commitment to sustainable business practises. It was ranked in fifth place, the best medium-sized company in the Top 10 ranking of the 2019 Integrated Governance Index, an analysis model of the degree of integration of ESG factors within business strategies. Similarly, Iren was recognised for its commitment to support the values of social and environmental sustainability at the "The New Business Economy for the Common Good" convention organised by the Business Strategies Association, the Christian Union of Entrepreneurs and Business Executives and the University of Genoa. Finally, in 2020, Iren was ranked A by Carbon Disclosure Project (CDP) and in 2021, it was recognized as the "best performing large company" at SDA Bocconi University, in Milan, during the Best Performance Award ceremony.

3.3. Data collection and analysis

Data collection has gathered various sources of information in order to ensure the trustworthiness of the observed phenomenon and obtain evidence of convergent validity (Voss et al., 2002). The data includes primary sources (interviews with managers) and secondary data and information (company documents, press releases and other reports).

As a prime source of data, the authors conducted face to face semi-structured interviews and follow-up telephone interviews with managers at different institutional levels to obtain practical evidence on the events of the COVID-19 disruption and gather perception over the practises of IT and how they changed in 2020. Interviews were scheduled in the second half of 2020 with Dr. Massimiliano Bianco, CEO of Iren Group (CEO), Dr. Moris Ferretti, Vice-President of Iren Group (VP) and Dr. Selina Xerra, the Chief Corporate Social Responsibility Officer (CSRO), with a particular attention to, and collaboration with, local authorities. Authors obtained the authorization to disclose the identity of the interviewees (names, surnames, role and years of experience). Table 1 provides the details, accordingly.

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The research process is an interactive one between interviewers and interviewees in the form of dyadic relationships through discourse (Qu and Dumay, 2011). To preserve the quality of the interviews, attention was paid to maintain the flow of the interviewee's story, as well as creating a relationship with the interviewee and, finally, avoiding interviewer bias (Schensul et al.,1999; p. 141).

Individual interviews took place in the presence of at least two interviewers. The list of the interview questions was sent via email 2 weeks before the interview date. As a secondary source of data, the authors extracted secondary data and information from sustainability reports, press releases and communications about Iren. All the data was gathered on multiple occasions over a period of 24 months, starting in 2018.

Data analysis was constructed around the contextualisation of the information gathered with a qualitative content analysis (Krippendorff, 2004). The content analysis is based on a systematic and objective examination of the empirical data and is an applicable tool for arranging various types of written documents. The aim is to obtain a broad description of the phenomenon by organising and classifying the data by condensing words and phrases into fewer content-related categories and, further, forming themes and patterns (Krippendorff, 2004; Unerman, 2000). To this end, the authors familiarised themselves with the sustainability reports and transcribed the interviews verbatim to gather an overview of their CSR practises. Each author analysed the passages of written texts to make the data interpretation as objective as possible. A comparison of each individual interpretation was then made, and interviewees were again involved to confirm the authors' interpretations. Then, the authors computed together a categorization of the quotes collected with an iterated process which facilitated the identification of an IT approach, based on the conceptual framework of Devalle et al. (2021). The condensed data was organised according to time and processes, applying the event-listing matrix and a growth gradient for determining sequences and hierarchies following the research steps suggested by Miles, Huberman and Saldana (1994). The event-listing matrix arranges chronologically the events that occur over time, while the growth gradient displays the changes across time. Thus, it was possible to derive the IT stages of developments and the IT related features which emerged before and after the exogenous shock of the COVID-19 pandemic. This analysis was conducted with Atlas.ti and sentences and passages were taken from the unit of the qualitative content analysis. As suggested by Guion, Diehl, & McDonald (2011), the research method involved two different triangulations: a first one between data sources (data triangulation for data collection) and a second one among the researchers (investigators triangulation for data analysis). The use and the analysis of multiple sources of information followed the construct validity test.

Table 2 systematised the research method of the case selection, data collection, and analysis methods.

--- Table 2 here---

4. Results

The findings are graphically shown in Table 3 and present the evolution of IT over time that has been developed by Iren. The results are presented considering the stages of development of IT that have been sorted out from the analysis. The first refers to the period before the pandemic crisis 1) IT before COVID-19; while the other two refer to the period during COVID-19: 2) Uncertainties and opportunities during COVID-19 disruption and 3) Implementations as a consequence of the COVID-19 disruption.

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4.1. IT before COVID-19

The analysis of the complex imbalances when addressing economic, social and environmental matters in the public multi-utility sector is the primary objective. Generally, companies adopt different approaches to tackle these topics. In particular, some of them have developed a "greener" approach as a marketing tool to strengthen their corporate reputation, whereas in other cases companies aim to be compliant with the regulation, "*only a small part of them carry on with a substantial integration between CSR practises and the company culture*" (CIRSO). This Integrated CSR approach

characterises the multi-utility sector because in this context, sustainability, defined as the attitude to meet the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987), is naturally embedded for its players. Therefore "*the type of services delivered and the virtual overlap between ownership and customers (users) reinforce the ESG practises as an essential element in the DNA of these companies*" (**VP**). Starting from the 90s', this strong relationship elected this sector as a driver in a corporate transition toward more sustainable business models. In the meantime, the leading companies in this sector voluntarily improved their reports in order to introduce non-financial information in the corporate disclosure. "*This trend naturally involved also Iren, which immediately realised that the green dimension was essential in its operating process*" (**CEO**), because an integrated approach must be considered to be fundamental to guarantee the durability of the company, which aims to improve the quality of life of the communities and their residents. Based on this consideration, "*these elements must be directly involved in current strategies and future plans for an effective development of the business*" (**CEO**). Exogenous forces pushed public utilities to proceed toward this implementation, "*because in this sector, more than others, the attention to stakeholders is demanded and recommended*" (**VP**). This implementation has been developed year by year, but the most difficult point was to advance the CSR practises from an operating level to a strategic one, especially linked to the core business. This orientation has been initiated by the top management, trying to "*integrate the sustainability perspective in every level of our organisation with the aim of stimulating awareness on these topics*" (**CSRO**).

This involved the governance of every sub holding company requiring the achievement also of non-financial results for the first time. "*This broadened the horizon of observation and shed relevance on a medium-long perspective against a short-termism view, which is the most effective way to monitor the integration of these practises in a continuum logic*" (**CSRO**). As a consequence, this practically means addressing "*a longer vision that naturally also required an extension of the financial perspective on the board of directors*" (**CEO**). This extension brings out a strong relationship between CSR practises and the company's durability, because CSR issues are analysed considering both their financial implications jointly with their societal impacts. At the same time, the attitude to involve new interests (from a wider audience of stakeholders) redefines the priorities for management by identifying new practises that are now fundamental in order to guarantee the survival of our company on the market over time.

For a substantial diffusion, and to avoid sole compliance, Iren opted for a widespread cooperation with the business unit managers and their staff, extending responsibilities to the entities that must directly operate with this new perspective. This approach has been translated into practice involving also external experts in the CSR field that supported the group in this transition. "*Corporate governance was our starting point because we oriented our managers toward an integrated planning of CSR objectives. However, this activity was not only an initial effort, it was an inception to develop a new model to carry on day by day and that over the years affects the achievement of short-term targets along with the long-term ones*" (**CEO**). The inception toward this transition was instilled by the board of directors as a consequence of greater pressure on these topics generated by different classes of stakeholders (shareholders, customers and associations). The executives "*collected these different inputs, but framing, at the base of this transition, stakeholder diversity as a main element in the strategic planning by allowing them to contribute to orient it accordingly*" (**VP**).

This new perspective led Iren to invest in specific activities closer to ESG aims, thus redefining the group's strategies. For instance, Iren, as a power grid operator, invested in "sustainable mobility" activities to promote integration between these two sectors and to achieve one of their main targets: cities' resilience. This diversification is based on the opportunity to exploit the company's know-how and the technologies developed over time for innovative solutions. This means that "*Iren expanded its business to collect synergic benefits and economies of scale, thus it fixed a "fil rouge" in sustainability*" (**CSRO**). "*This leads its core business to be flexible in relation to the opportunities detected*" (**CEO**).

Stakeholder engagement has a paramount significance for Iren to collect stakeholder's needs which are explicitly expressed or intrinsically latent. This is possible thanks to a continuous dialogue with stakeholders. To this aim, starting from 2014 Iren introduced local committees in the regions where the group operates. This implementation shaped the company governance structure as a source of information. The vice-president was delegated to coordinate the local committees and to summarise the evidence. Through a two-way communication, these committees gather opinions, concerns on certain ESG issues from citizens and external parties, who are generally considered to be low-power stakeholders in the decision-making process. Together they analyse problems, propose solutions based on the analysis to contribute towards defining the main topics that are at the base of Iren's materiality analysis and are the core of Iren's strategic planning. These committees consist of volunteers and their composition is not driven by the group, but they are self-organised and independent. A committee represents the community from different perspectives, but common elements are the priority to maximise joint benefits and address the needs of the group. "*In this way we work together to find the best match possible for everyone*" (**CSRO**). The sole check is on the number of people involved and their expertise to guarantee an effective dialogue and the quality of the information collected. "*At the moment, this approach is unique because the participants on these committees engage with voluntary intentions, but with a high commitment and a critical but constructive view*" (**VP**). The CSRO attends these meetings. This cooperation not only generates value, but "*it orients the group towards the creation of value over time, making this change timely*" (**CEO**). An example are the investments in the energy efficiency of the buildings that involved 45 cities for more than 100 buildings. This improves the company profit, but at the same time these outcomes enrich stakeholders and the local communities.

Regarding one-way communication, Iren has progressively improved its disclosure on CSR and sustainability issues starting from the 90s. At the beginning, the company decided to communicate specific processes on the allocation of resources, but its formalisation led to possible improvements. "*This shed light on a bivalent and reciprocal relationship between strategies and communication. This has been gathered from a combination of financial and non-financial KPIs as a driver to evaluate our performance*" (**CEO**). It reveals an improvement of the company's attitude to communicate that has detailed and direct consequences. For instance, "*through an introspective analysis, the presentation of reports improved the internal knowledge of the business activities*" (CSRO). This even gained much more importance because Iren was the result of a combination of different contexts because of mergers. "*It was functional to harmonise different realities by improving the internal culture and sharing common valuables*" (**CSRO**). Internally, this led to defining a common language that linked and oriented all the people toward common aims. Externally, "*this communication enabled a real engagement with the local communities and residents, explaining the company's activities as well as its targets*" (**VP**). In conclusion, "*non-financial disclosure gives the opportunity to raise the contents to a strategic level and this is an effective tool for a deeper stakeholder engagement to achieve a substantial integration between different entities and cultures*" (**CEO**).

Ultimately, Iren has been widely active in developing circular economy projects entirely focused on environmental challenges, with a specific focus on the waste treatment. A circular economy approach to waste management is evident in several results. The first is the separated waste collection that, in 2019 in the area served by the Group, reached on average 67.3% (56.4% in 2010), against a national average of 58.1%. The second was an extension of a "pay-as-you-throw" system to around 200,000 residents, for a total of approximately 513,000 people with impacts on the reduction of non-separated waste (-7% per resident per year in 2019 compared to 2018). A further result is the major investment programme aimed at optimising Iren's production plants for the recovery of waste material (+145,000 tonnes processed in 2019), with the aim of closing the cycle in a virtuous manner. "*Iren Group manages its own waste and the waste managed on behalf of local communities with the aim of reducing its production and increasing recovery and production of energy from waste*" (Sustainability Report, 2019). Furthermore, "*we aim to enact a circular economy mindset to kids, as*

they will be our future generation, thus we act accordingly. In so doing, we have developed several learning programmes, for instance we have addressed a learning programme at Agri-Food Centre in Genoa which is followed up in primary schools, showing how unsold fruit and vegetables (the "waste") can be transformed into bioplastic" (**CSRO**). Finally, in 2018 Iren signed the "*Climate Action and Circular Economy" loan agreement with the European Investment Bank (EIB) development plan for the 2018-2023 period in relation to the circular economy, decarbonisation and with the objective of adaptation to climate change*" (**Sustainability Report, 2019**).

4.2. Uncertainties and opportunities during the COVID-19 disruption

The current pandemic reveals the strong relationship between the economy, society and the environment. "*The challenge during this disruptive time will enhance the awareness of the remarkable need to positively contribute to sustainable development over time and not only temporarily. For this reason, it is noteworthy to take into account investments for a more sustainable transition*" (**CSRO**). Generally, investments facilitating this transition will orient companies' behaviour towards new perspectives. However, this development path does not involve the multi-utility companies, as they are leading actors in this transition. This is the consequence of their strong commitment to strategic activities (infrastructures, energy production, recycling, etc.). "*Iren is going to take on this role, with the related responsibilities, to be a driving force in the national economic recovery. Obviously, Iren does not work alone, but its strategies involve a wider number of other companies that cooperate with it*" (**CEO**). Moreover, "*in September 2020 Iren evaluated the most probable pandemic effects and this sensitivity analysis led the company to improve investments. These investments are concentrated in the first two years because we estimate that in this period they can act as a flywheel for the national economy. At the moment the plan consists of 3.7 billion Euros within 2025, of which 2.2 billion Euros refer to sustainability issues, primarily with a keen attention towards digitization processes and internal skills*" (**VP**). It is noteworthy to remark that this strategic orientation had already been planned to some extent before the pandemic crisis and it supported operational structure to easily overcome the lockdown periods. This is fundamental because Iren, like other utility companies, could not stop their activities in those months (8,100 people continued to work without a day off). In fact, before the pandemic, 1,000 employees had already adopted smart-working solutions. When the forced lockdown was brought in, "*Iren was already organised for these smart working solutions and the crisis was an opportunity to implement them to guarantee viable working conditions for their employees*" (**CEO**). The number of employees working from home jumped to 3,000. After the spring of 2020, Iren improved investments in digitalization by 14%, with the development of technological platforms and devices.

Furthermore, the pandemic emphasised both the importance to invest in CSR projects and the relevance of a circular approach. Four main guidelines were followed: waste collection, a new plant for waste treatment, water depuration and district heating. These elements have been affected by a substantial redefinition of the circular economy approach that is thoroughly illustrated in the next section. In Iren, "*these months did not require a revision of its strategies, but the exogenous event gave the opportunity for an acceleration in their implementation and the potential primary role that Iren plays for its country and its communities was clearer*" **(CSRO)**.

In this context, Iren emerges not only as a player on the market, but also as a vehicle to lead a plurality of different entities in overcoming current and temporary difficulties. For this reason, "*we decided to improve our efforts in this direction as never before. This is because our success, in terms of profits and purpose, is strongly related to the success and the duration of our stakeholders*" (**CEO**).

4.3. Implementations as a consequence of the COVID-19 disruption

A greener transition constitutes a remarkable challenge, especially for public utilities which interface

with several stakeholder groups. In Iren, this has been the primary objective during the COVID-19 adaptation period. In fact, "*this pandemic has opened eyes toward a more sustainable future, where innovative solutions can accelerate the development of our smart cities. This is an exceptional momentum to work on clean energy for the near future.*" (**CSRO**). Similarly, "*we have to act now, no matter what the circumstances are, otherwise the changes will never happen. This is also because at the moment regulators are supporting this implementation with the Recovery Plan, also known as the Next Generation EU. These financial supports may converge towards the achievement of the Agenda 2030, which is a compelling objective to achieve, thus we have to act accordingly*" (**CEO**). In so doing, Iren aims to pursue a disruptive greener transition along two concrete actions that have a long-term view for sustainable development: the "*multicicle economy*" model and the Enterprise Risk Management (ERM) system.

The first action relates to the development of the "*multicicle economy*" model as a result of the fusion between a circular economy and the multi utility business model. This evolution extends the circular economy approach principally adopted for waste management to other renewable resources (water and energy), underlying the primary role of technological innovation and high investments in processes. "*This emphasises the convergence between renewable resources and innovation with regards to knowledge sharing*" (**CEO**). "*This combination instils the awareness of innovation as an essential element to effectively address interdependencies among stakeholders' interests*" (**VP**). "*This is a crucial point to deal with the scarcity of natural resources, that is why we aim to enact a "multicicle economy" model which multiplies the value of the circular economy for the years ahead, by considering all our business activities. From a social perspective, this constitutes the prerequisite for implementing sustainable smart cities*" (**CEO**). As shown in Iren's 2025 Industrial Plan, at the base of this transition, the following main activities contribute to implementing this "*multicicle economy*" model: responsible management and adding greater value to waste, a sustainable use of water resources, green energy that favours the decarbonisation processes with the hydroelectric production plants, energy efficiency in buildings and ultimately E-mobility, as a truly alternative solution to sustainable electric and shared mobility. Together with Ambrosetti, Iren has also addressed specific KPIs to compose a matrix where waste, water and energy are combined with the three main phases of the resource life cycle (management, processing and renewal). This matrix brings out 9 metrics that, once combined and summarised, give a single performance indicator. Ambrosetti tested this multi-cycle index on other multi utility companies and found that in 2020 Iren was a pioneer in this multiple integration.

The second action stimulates initiatives for the mitigation of risks. "*When managing risks both financial and non-financial KPIs should be taken into account (also related to ESG issues) that can lead to proper strategies and promote organisational change aimed to preserve durability over time*" (**VP**). Concretely, "*Iren decided to implement its enterprise risk management system (ERM) by matching financial and non-financial issues in an integrated way*" (**CSRO**). The ERM system assesses the "*adequacy of the identification, measuring, management and monitoring system for corporate risks, as well as to verify the appropriate and prompt application of corrective actions held to be suitable for risk reduction*" (**Sustainability Report, 2019**). Thus, it is essential for the integrated management of the risks which is conducted in an iterative manner. For this purpose, "*in order to gather an overview of the surrounding context, Iren systematically conducts scenario analyses and consults different sector-specific sources of information (e.g. Italian Electricity Market Study – 2019-2040), focused on topics such as climate change, modifications of laws and regulations and technological innovations*" (**CEO**). For Iren, "*climate change is the main issue to which Iren devoted particular attention in terms of identification, assessment, and management processes to tackle risks and exploit opportunities*" (**VP**). Such an analysis of CSR issues lies at the foundation of the risk matrix with the main risks in terms of impact and probability, that allows the Risk Management and the Corporate Social Responsibility Department to collaboratively work together in order to address mitigating actions and suggests CSR objectives and targets with reference to the strategic pillars

(Battisti et al., 2022). Furthermore, stress tests are conducted methodically and regularly to verify both the objectives and the targets, as well as mitigating actions parallel to a probable non-achievement of them. "*The peculiarity of our ERM system stems from the direct linkage with the planning, in other words, our ERM drives the strategic planning of the company, and redirects priorities based on the risk assessment, management and control in a synchronic and iterative way. Thus, we do believe that it is paramount to implement an ERM system so as to react proactively to the dynamic and ever-changing circumstances we are all facing during this COVID-19 pandemic*" **(CSRO)**.

In conclusion *"we believe that the pandemic impacts on the corporate culture, in particular it increased the responsibility and sense of belonging. This is translated into a more widespread system of delegation around the group, showing the role of each employee in the development of the operating strategies"* (**CEO**) Iren had already been working on them, but the crisis improved and facilitated this change. In other words, it brought to a head the need for an approach based more on leadership than on management. *"Iren opted for an inclusive approach, sharing the group's vision and perspective on every level, with a widespread engagement of the insiders toward the business targets"* (**CEO**). This can be considered as a big step. In fact, middle management is generally more oriented towards an operating approach to solve day by day commitments than to extend their vision to the future.

5. Discussion

Although accounting and management scholars have drawn attention to the importance of exploring IT, little scrutiny has been paid to the understanding of its developmental path during disruptive times. The purpose of this paper was to identify how IT stages of development evolved during the COVID-19 pandemic. We investigated how IT approaches have been applied to preserve stakeholders' interests, while maintaining an economic and financial balance. The case study of Iren brings up the following argumentation. IT has emerged as a dynamic and progressive process that includes the following IT stages of development: IT initiation, corresponding to the phase before COVID-19, IT reactiveness and IT implementation corresponding to the phase of the COVID-19 adaption. For each IT stage of development, this study identifies three CSR strategic postures that support the resilience of the multi-utility company in overcoming this period of crisis: stakeholder engagement, flexible proactiveness and democratic durability. Figure 1 shows the theoretical model of IT stages of development and CSR strategic postures.

---Here Figure 1---

Stakeholder engagement corresponds to the initiation phase of IT (Rinaldi, 2020). Stakeholder engagement in IT initiation is in line with the findings of Devalle et al. (2021) which show that stakeholder engagement is a key element to distinguish substantial CSR strategies. In a preliminary stage of implementation, stakeholder interests are multi-faced, and, for this reason, they often compete with paradoxical dilemmas to manage (Freeman, 2010; Haffar & Searcy, 2017; Van der Byl & Slawinski, 2015). In this scenario, it is much easier to trade off one interest against another, or eventually, apply compliance-based programs. An IT mindset rethinks problems by proposing new solutions so that "these interests can go together, and even more value can be created for each" (Freeman, 2010; p. 9). Stakeholder engagement in the form of one-way communication and two-way communication, along with the implementation of collaborative partnerships with common objectives, is crucial in this phase (Devalle et al., 2021). Furthermore, collaboration and mutual affinity on sustainable issues and concrete exchanges on research and development are the key ingredients of new sustainable business solutions.

During the period of crisis, the capacity to have a timely optimization in resource allocation is crucial. Moreover, a governance structure oriented to preserve and guarantee cooperation with stakeholders is an important driver to make changes timely. A continuous dialogue leads to monitoring day by day activities by improving the awareness of the company to identify the priorities for the users, and to suggest the needs that must be satisfied first. This is an important strategic advantage to reduce the time of a market reaction and to substitute long, complex and generally expensive market investigations. This proactiveness should be anchored to the expertise of the management with the support of the know-how gained through investments in innovation. This permits a high grade of flexibility with diversification in the operating activities, considering the opportunities detected. This CSR strategic posture can be conceptualised into "flexible proactiveness" emerging as a driving attitude in the reactiveness phase of the COVID-19 disruption.

It is a well-known fact that multi-utility companies are not only market players, but their role is a more complex one. In fact, they should be vehicles to lead communities and commercial partners in the future, overcoming current and temporary difficulties, but also promoting changes to achieve their balance. Multi-utility companies are not charity entities but their success, in terms of profits and purposes, depends on the success of their stakeholders. In this perspective, so as to preserve the company's durability, it is necessary to balance the company's interests also by taking into account the stakeholders' interests for their preservation. For these reasons, durability is the result of a multitude of interests bound together that constitute a "democratic" feature. The term "democratic" derives from "δῆμος-*demos"*, which means ordinary citizens in a city-state, and it emphasises the strong interrelations between the company and society (the community in which it operates). That is, democratic durability can be defined as the optimization of the interdependence of a company's and stakeholders' interests towards their collective preservation over time. Through flexible proactiveness and stakeholder engagement, multi-utility companies address future stakeholders' needs to meet their future expectations. For this reason, this approach expands the horizon of CSR strategic planning because it mitigates the myopia characterising companies that are focused on short-term results. As shown by Ambrosetti, this tendency produces significant multiple effects in value added (for each euro of value added produced by Iren, there is a direct effect on society equal to an additional 0.87) and employment (for each employee, Iren generates 2.7 jobs / positions in the community). These multiples explain the outstanding growth trends in the last few years and emphasise the strong relationships between Iren and the society in which it operates.

5.1. Theoretical implications

From a theoretical viewpoint, the study strengthens the concept of IT by determining its developmental paths and by addressing the CSR strategic postures that characterise the IT evolution. The initiation stage of IT is mainly based on stakeholder engagement, then, the next stages of IT development are IT reactiveness and IT implementation. These IT stages of development are based on the theoretical reasoning of stakeholder theory, because stakeholder engagement practises are the cornerstone of both IT initiation as well as of IT reactiveness and the IT implementation phases. That is because IT is the process of decision making, management, and reporting, by considering the intertwined relations of the company and its stakeholders. Furthermore, and linked to this, these interdependencies have been highlighted even more greatly in this pandemic. On the one hand, the COVID-19 pandemic has underlined the limitation of globalisation (Muzio and Doh, 2020), and, on the other hand, it has strengthened the interdependence among companies and between companies and society. Within the interdependent system, each company along with stakeholders, can overcome this uncertainty by contributing to the enhancement of sustainable development (Freeman, Phillips and Sisodia, 2020). In the IT reactiveness phase, we conceptualise flexible proactiveness as the capability of the companies to be resilient. The term 'resilience' has been used at an organisational level to describe the inherent characteristics of companies that are able to respond more quickly, recover faster or develop more unusual ways of doing business (Sutcliffe, 2003; Vogus and Sutcliffe,

2007). Ultimately, in the IT implementation, we conceptualised democratic durability as a force that supports this process and enhances a long-term logic for sustainable development. These innovative CSR strategic postures contribute to and expand the current literature on IT, especially considering its evolution over time.

5.2. Managerial implications

From a practical viewpoint, the research provides practical solutions for companies that aim to face sustainability challenges and are going to implement an IT attitude toward a holistic approach. First, IT requires a corporate governance structure that supports the implementation of CSR projects at the core of companies' business strategy by addressing a forward-looking perspective. The board of directors has to take into account different stakeholders in the decision-making process, considering different interests, needs and ideas (wider audience & stakeholder diversity). Second, there is the need to enhance cooperation between managers and stakeholders as the basis for an effective stakeholder engagement. Stakeholder engagement addresses one-way communication (financial and non-financial information, social media, press releases, etc), dialogue (regional committees, interviews, reports, etc.) and promotes partnerships by developing circular economy projects with stakeholders. Stakeholder engagement leads to investing in new activities closer to CSR issues that reshape the group's strategies and priorities. Third, the dynamic attitude of flexible proactiveness corresponds to actions that foresee and tackle new opportunities in a timely way. Ultimately, the development of the "*multicicle economy*" model and the implementation of an ERM system represent two IT actions that address a long term-view for sustainable development. They both constitute tools of CSR strategic planning: the "multi-circle economy" approach optimises resources in a sustainable and circular manner, while ERM fosters risk management as a main driver to redirect CSR objectives and priorities. All these elements contribute to the pursuit of democratic durability toward a collective value creation and, as derived from the case, they enhance both resilience and relationships between business and society.

When a company implements all these CSR strategic postures, it addresses the DNA code of CSR 2.0 conceptualised by Visser (2011), which includes value creation, strong governance, societal/stakeholder contributions, and environmental integrity with sustainable ecosystems (p. 150). In this scenario, companies changed their CSR strategies from image driven to performance-driven; from specialised to integrated; from standardised to diversified (Visser, 2011, p. 148).

The current crisis can be considered to be an opportunity to rethink companies' business models with an Integrated CSR perspective. Furthermore, to overcome periods of crisis, managers can adopt these CSR strategic postures (stakeholder engagement, flexible proactiveness and democratic durability) into the company's DNA. These attitudes should be implemented subsequently to enhance collective value creation, resilience and relationships between business and society. This management behaviour addresses real CSR actions that are far from being symbolic.

6. Conclusions, limitations and future research directions

Businesses and society are facing the need for recovery and adjustments to a "new future" beyond the "new normal" (Muzio and Doh, 2020). In this context, IT plays a crucial role to overcome this unprecedented time with suitable responses and reactions. Thus, in the context of the multi-utility sector, this paper explores the IT stages of development and CSR strategic postures that have evolved before and during the COVID-19 pandemic. The research provides stimuli for recovery through three main guidelines: stakeholder engagement, flexible proactiveness, and democratic durability as the CSR strategic postures that enhance resilience and the integration of CSR practises at the core of business strategies. Therefore, related IT actions can be addressed by managers to overcome this period of crisis, and to forge new circular CSR initiatives that will shape companies' business models

for tackling societal challenges (Di Vaio et al., 2021).

The research provides practical solutions for companies that face sustainability challenges and are going to implement an IT attitude toward a holistic approach. In particular, IT needs a corporate governance structure that integrates CSR practises with a forward-looking perspective in the decision-making process. This is achieved by strengthening stakeholder engagement through communication, dialogue, learning activities, and partnerships. This iterative process drives investments in new CSR activities that reshape companies' strategies and priorities timely and proactively. All these efforts pursue democratic durability toward value creation, strong governance, societal/stakeholder contributions, and environmental integrity with sustainable ecosystems that constitute the DNA code of CSR 2.0 (Visser, 2011).

This research has limitations that can be addressed in future academic studies. Our case study is limited to an Italian multi-utility company; thus, IT actions are affected by context and firm-specific factors. For these reasons, the results cannot be generalised directly to other businesses operating in different sectors. In more detail, the study did not analyse IT actions using specific examples from industries that have been particularly challenged during the COVID-19 pandemic (e.g. automotive industry, retail and tourism industry, agricultural and food sector), as sustainability transformation will be very different in every sector (Schaltegger, 2021). The present research did not develop within-scale (e.g., within organisation), between-scale (e.g., between organisations) and cross-scale (between organisations and socio ecological systems) analysis. Additionally, the case study is limited to the period in which the pandemic is still ongoing, and the study does not consider future events that can change the course of sustainable development. As a matter of fact, the economic and societal disruption caused by the pandemic will accelerate both the decline of carbon-intensive industries and leverage low-carbon innovation (Horish, 2021), but this longitudinal case study did consider these impacts on IT. However, this research provides IT actions that can sustain the recovery and meet the Agenda 2030. Future lines of research can investigate how systemic and collaborative initiatives can contribute to pursuing the SDGs through IT actions. Similarly, investigations could verify which IT actions meet specific SDGs and how far they are to do so. Furthermore, multiple case studies can be fertile ground for analysis of any potential restrictions that impede the pursuit of sustainable development and that destroy value for stakeholders.

This study contributes to the debate around how business models and stakeholder relationships at the basis of IT can be innovated with an integrated CSR perspective.

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Tables and Figures

Table 1 - List of interviewees

Interviewees	Role	Years of experience in Iren
Dr. Massimiliano Bianco	CEO of Iren Group from December 2014 to June 2021 Current Senior Advisor in Circular Economy and Energy Transitions in the infrastructure sector.	7 years
Dr. Moris Ferretti	Vice-President of Iren Group and Chairman of Iren Mercato S.p.A.	6 years
Dr. Selina Xerra	Chief Corporate Social Responsibility Officer (CSRO) of Iren Group, former External Relation Manager	11 years

Table 2 – Research method: case selection, data collection and analysis methods

Research phase (Stake; 1995)	**1) Case selection**	**2) Data collection**	**3) Data analysis**
Method	Single case study (Yin, 2003; Eisenhardt, 1989)	Primary and secondary sources of information	Qualitative content analysis (Krippendorff, 2004) implemented by adopting ordering methods by time (event-listing matrix and growth gradient) suggested by Miles, Huberman and Saldana (1994)
Underlying reasonings	• to address the «how» question; • to understand the effects of COVID-19 on IT.	• Data triangulation (Yin, 2003) • Convergent validity (Voss *et al.*, 2002)	• to obtain a condensed and broad description of the phenomenon • to derive themes and patterns (Krippendorff, 2004)
Process	• Selection criteria based on the relevance of the sector, dimensions and business commitments toward responsible business practices at the company's core strategy	1) Primary data from interviews: . to *interpret* IT according to the meanings assigned by the interviewees (Lincoln and Denzin, 2000) . to *get perceptions* of how COVID-19 impacted on IT 2) Secondary data from sustainability reports, and newspaper articles: • to gather further information • to extend the analysis 3) Secondary data from prior studies on IT and mainly focused on the public utility sector.	1) Quotes from interviews: • *IT* (decision-making, organizational culture, collaborations, among the others) • *Stakeholder engagement* (stakeholders, communication, cooperation, partners, value creation, among the others) • *Multi-utility sector* (circular economy, resource management, infrastructure improvements, among the others) • *Crisis (COVID-19, uncertainty, disruption, opportunities, investment*)* 2) Keywords from sentences of written texts: *integrated, sustainability practices, circular economy, engagement, crisis; CSR.* 3) Keywords from sentences of academic texts: *public-utility; COVID-19; CSR.*

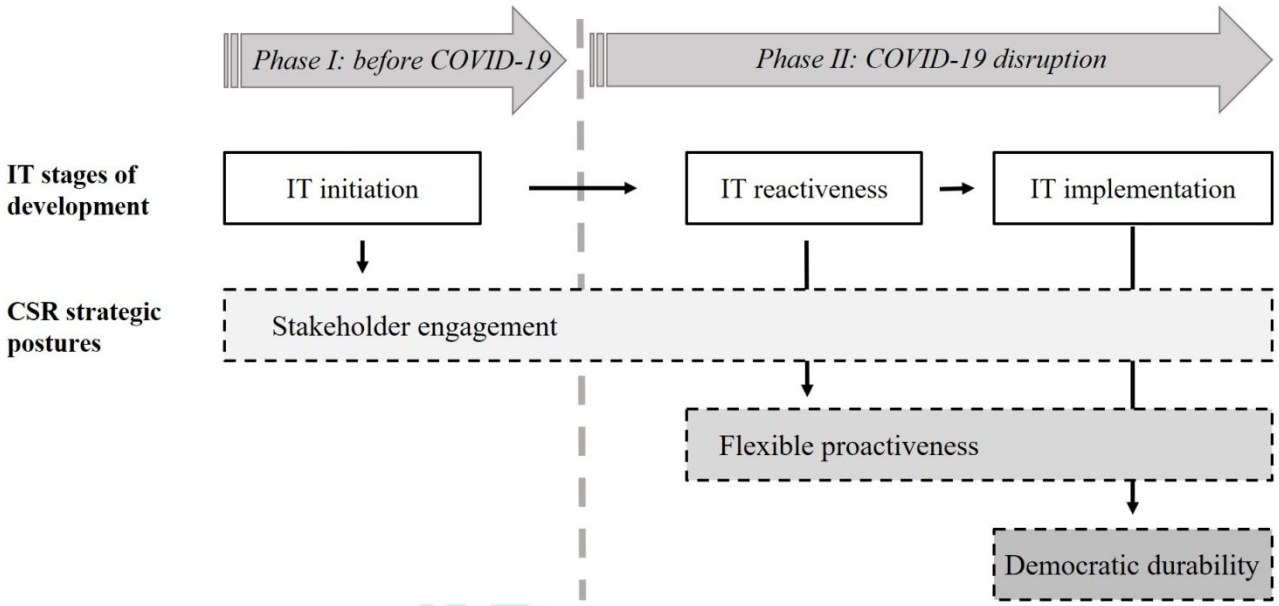
Source: Own elaboration

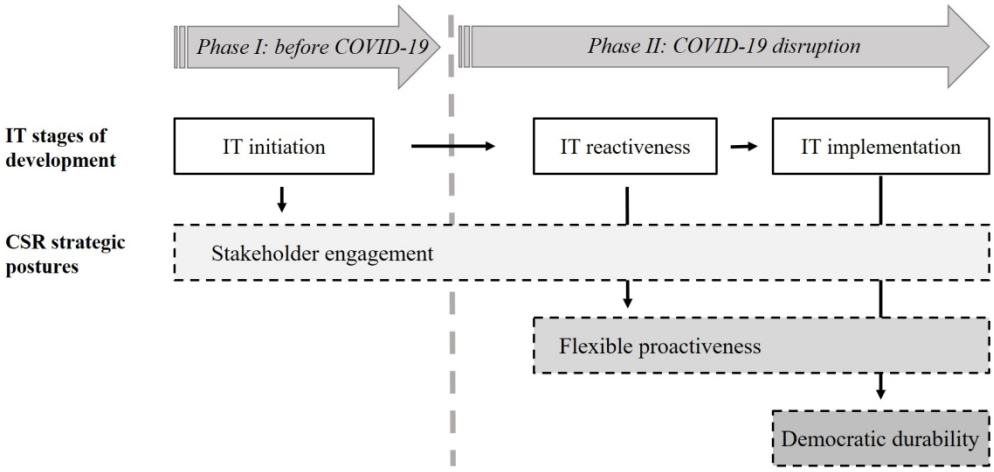
Table 3 – Summary of findings

Phases	IT stages of development	CSR strategic postures	IT in Iren		
			Framework of analysis *(Devalle et al. 2021)*	**IT actions**	**Explanations based on quotes coded**
Phase I: IT before COVID-19	**IT initiation**	Stakeholder engagement	Acknowledging and dealing with the paradoxical tensions	• Governance mechanisms • Strategic attitude • Performance measurements	• "Corporate governance was our starting point because we oriented our managers toward an integrated planning of ESG objectives. But this activity was not only an initial effort, but it was an inception to develop a new model to carry on day by day and that will affect the achievement of short-term targets along with the long-term ones over the years" • "Iren expanded its business to collect synergic benefits and economies of scale, thus it fixed a "fil rouge" in sustainability" • "This shed light on a bivalent and reciprocal relationship between strategies and communication, this has been gathered in a combination between financial and non-financial KPIs as a driver to evaluate our performance"
			Communication with and for stakeholders	• Two-way communication: ○ Institutionalization of the regional committees • One-way communication, reporting and accounting for stakeholders	• "At the moment, this approach is unique because the participants on these committees engage with voluntary intentions, but also with a strong commitment and critical but constructive views" • "non-financial disclosure gives the opportunity to raise the contents to a strategic level and this is an effective tool for a deeper stakeholder engagement to achieve a substantial integration between different entities and cultures"
			Partnership for collaborative innovations	• Circular economy projects	• "Iren Group manages its own waste and the waste managed on behalf of local communities with the aim of reducing its production and increasing recovery and production of energy from waste"
Phase II: IT during the COVID-19 disruption	**IT reactiveness**	Flexible proactiveness		• Investments • Corporate governance changes for the engagement	• "in September 2020 Iren evaluated the most probable pandemic effects and this sensitivity analysis led the company to improve investments"
	IT implementation	Democratic durability		• "Multicircle economic model" • Implementation of the Enterprise Risk Management system	• "We aim to enact a "multi-circle economy" model which multiplies the value of the circular economy for the years ahead by considering all our business activities. From a social perspective, this constitutes the prerequisite for implementing sustainable smart cities" • "The peculiarity of our ERM system stems from the direct linkage with the planning g, in other words, while in other realities ERM serves solely for the internal control system , our ERM drives the strategic planning of the company, and redirects priorities based on risk assessment, management and control in a synchronic and iterative way".

Source: Own elaboration

Figure 1 – Model of IT stages of development and CSR strategic postures





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