THESIS WORK

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The Phoenix Effect - Rising from Crisis through Digital Collaboration: How Crisis affects Social Enterprises' Digitalization for Value Co-Creation

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Preface: Personal Note

Creating value for people would be the one of the most satisfying feelings people could ever hope to imagine. That is why, I was always curious about business, management and marketing. I have also understood the socio-economic influence coming from diverse marginalized communities and motto I like the most is:

"The power of diversity is the common wealth for our communities."

I personally have been involved in entrepreneurial activities since 2015 when I co-founded social enterprise which was trying to solve socialization problems among kids. Later on, I became one of the coordinators of non-governmental organization (NGO) which was and still is dealing with inclusive society and youth's social inclusion. That is why, it was very essential for me to choose this topic and have solid research on social entrepreneurship for my PhD journey.

This thesis is related to social and ecological enterprises in Azerbaijan, however the topics are also issue in other countries as well, since it focuses on the phenomena more than the geographical context. What social and ecological entrepreneurs are working for are essential to the community satisfaction involving both customers and staff as well as our world and environment. All people involved in businesses should be aware of the impact they have on consumers, employees and off course, on our planet.

"Still have a hope to see the world better than we found."

Hikmat Mursalzade, March 2025.

Acknowledgements

This work is a tribute to my belated father Dr. Tofiq Mürsəlov who was one of the kindest persons I have ever known. Dedicating my thesis to him personally made it easier for me to accomplish this PhD degree.

It has been a challenge to assemble a research project of this nature during long period of time. Various individuals have helped me in these difficult times and during the development process of my thesis work.

Firstly, I would like to thank to my supervisors Dr. Moreno Frau and Dr. Tamara Keszey whose advice, guidance and patience has been crucial in supporting me through this rewarding, yet challenging journey.

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Abstract

Increasing popularity of social initiatives makes it necessary for researchers to understand firms' attitudes in the context of social entrepreneurship. Social businesses can improve or alter their strategies and communicate more effectively with consumers, employers and employees according to their needs. Even though there are an established literature about entrepreneurship and business in general, research from marketing and management perspective, analyzing how digitalization and value co-creation affects social enterprises needs further investigation.

In practice, there is typically a collaborative relationship among social entrepreneurship, digitalization, and value co-creation, enhancing the positive influence of each: Digitalization simplifies communication, facilitating social entrepreneurs in co-creating value with different stakeholders, interconnection possesses the potential for bringing social change, and technologies help social entrepreneurs in creating novel solutions and adapting to evolving needs (Loukopoulos & Papadimitriou, 2022; Chandna, 2022; Mursalzade et al., 2023). Additionally, all three concepts are in close harmony with the Sustainable Development Goals outlined by the United Nations: The progress towards attaining the SDGs can be hastened through digital transformation, facilitating social development, and social entrepreneurship involving innovative sustainable business models strives to generate positive social and ecological changes (Lin et al., 2019; Ratten, 2022; Mursalzade et al., 2023).

Thus, our studies aimed to understand connections between digitalization, value co-creation, social entrepreneurship and crisis. It had systematic literature review and qualitative research methodologies of multiple case study as well as longitudinal case study. Therefore, research questions were developed based on existing literature and theories as well as individuals (entrepreneurs or employees in social enterprises) who participated in this research. The results suggested that digitalization improves value co-creation processes in social enterprises. At the same time, it was revealed that crises have also role in this. Crisis and market turbulence increase digital collaborations, as a result, there is increased resilience in social entrepreneurship amidst the adversities and difficulties.

Study 1 is a systematic literature review which aims to understand the connections between digitalization, value co-creation and social entrepreneurship. The article also aims to identify future research areas related to these connections. We* selected a final panel of 61 journal articles and synthesize their findings. First of all, we reveal literature gaps. Regarding the first research gap, our research identifies themes connecting the three streams of literature that need improvement. Second gap is a lack of COVID-19 focus in studies about digitalization, value co-creation and social entrepreneurship. Finally, we provide theoretical contributions and recommend directions for future research on digitalization, value co-creation and social entrepreneurship.

Enterprises prioritizing social issues over profit maximization can lead to value co-creation, especially in marginalized and unprivileged communities. In this regard, **Study 2** explores underlying theoretical mechanisms that tie digitalization and value co-creation together for social entrepreneurship's development. The second article aims to identify how digitalization enables value co-creation for social enterprises. We conduct multiple case studies, have 11 in-depth face-to-face interviews with social entrepreneurs from Azerbaijan and synthesize the findings from primary and secondary data. As a result, we reveal that digitalization enables value co-creation for social entrepreneurship through the new phenomenon, which we call Data-driven Social Co-creation (DSC), and its subcategories such as Efficiency, Resource Mobilization, Feedback Loops and Data Utilization. Finally, we recommend DSC framework which shows the relationship between digitalization and value co-creation in social entrepreneurship, and which is the study main theoretical contribution to the social entrepreneurship literature. Additionally, we provide a research agenda on the respective research field.

*We – "We" pronoun was used throughout the thesis, because I conducted these research studies with supervision of my professors dear Dr. Moreno Frau and Dr. Tamara Keszey within our Co-Cre8 research group.

Crisis and market turbulence can cause changes in digitalization and value co-creation of social enterprises. In this regard, this paper explores fundamental theoretical mechanisms that connect digitalization and value co-creation with each other for social enterprises within the context of crisis and market turbulence. **Study 3** aims to identify how crisis and market turbulence affect over time the way social enterprises employ digitalization to enable value co-creation. We conduct longitudinal case studies of 10 in-depth face-to-face interviews with the social entrepreneurs from Azerbaijan and synthesize the findings from primary and secondary data. Consequently, we reveal that social enterprises using digital collaboration can have more resilience against the crisis. Simultaneously, crisis and market turbulence affect the way social enterprises use digitalization for collaboration through the new phenomena which we call Crisis-Resilient Digital Ecosystem, Transformative Resilience Network, and Synergistic Economic Resilience which were tailored by their sub-categorical elements such as Crisis-Responsive Entrepreneurial Mindset; Digital Transformation; Value Co-Creation within Community; Agile Work Environments; Economic and Market Considerations. Finally, we theorized Interconnected Resilience Framework which shows the relationship between market turbulence and social entrepreneurship's digital collaboration. This model and event-ordered matrix is the study main theoretical contribution to social entrepreneurship and crisis literature.

This thesis has opened many further research areas and added to the already existing research of social entrepreneurship. Social enterprises are becoming the driving force behind the move towards social justice and with new social start-ups and enterprises, this trend will go on.

Keywords: Digitalization, Value Co-Creation, Social Entrepreneurship, Crisis, Market Turbulence.

JEL Codes: H12 Crisis Management, L31 Nonprofit Institutions, NGOs, Social Entrepreneurship, M31 Marketing.

Abbreviations

ATB:	Attitude Towards Brand
BOP:	Base of Pyramid
CSR:	Corporate Social Responsibility
DT	Digital Transformation
E-WOM:	Electronic Word of Mouth
NGO:	Non-Governmental Organization
KPI:	Key Performance Indicator
ROI:	Return on Investment
SE:	Social Entrepreneurship
SEs:	Social Enterprises
SME:	Small, Medium Enterprise
VCC:	Value Co-Creation
WOM:	Word of Mouth
WOMM:	Word of Mouth Marketing

1. General Introduction

In our modern world, new field of entrepreneurship has emerged: Social enterprises are in the process of opening new doors for the employees, as well as employers (Mursalzade, 2024). Social Entrepreneurship (hereinafter SE) makes innovations, creates resource utilization and tries to contribute to the solutions of social and ecological problems to co-create value (Wu et al., 2020) and to cause positive societal changes (Dacin et al., 2010). Therefore, the broader research topic of this doctoral thesis work is about social entrepreneurship. More in detail, this thesis explains the social enterprises' digitalization and value co-creation (hereinafter VCC). Additionally, one of the studies in this scientific research explore digital collaboration of social enterprises from the perspective of crisis and market turbulence.

The broader topic of social entrepreneurship is important from several social and managerial perspective such as youth unemployment, growing social problems and rise of digitalization and value co-creation as few of the solutions (Mursalzade, et al., 2023). The concern of unemployment is mounting negative results for people, specifically one of the most recent generations to enter the workforce - the Millennials, who are individuals born between 1980 and 2000, and are called Millennials because of their closeness to the new millennium and being raised in a more digital age (Kaifi et al., 2012). One potential solution for unemployment and poverty in general is social enterprise that hires the hard-to-employ and offer on-the-job training to transform workers into employment. It targets low-income individuals with a barrier to work – disconnected youth who are neither enrolled in school nor working along with many other unprivileged groups (Corinth, 2017).

Unemployment has dangerous results for young people's well-being and makes economic growth very slow (Council of Economic Advisors, 2016). Several causes were cited for unemployment phenomenon such as decreased demand for employees with low skill levels, weakening eligibility standards for welfare and disability programs, changes in communities' expectations and stigma surrounding unemployed youth (Doar, Holzer, & Orrell, 2017).

As a solution to unemployment, the 2006 Nobel Peace Prize winner Muhammad Yunus suggested new approach of microcredits – small loans to poor people (Yunus & Weber, 2007). The Gramen Bank that he founded, is the bank in which the poor borrowers become shareholders and so the profit sharing and sustainability are balanced with outreach to create maximum effect for the poor. To sum up, Gramen Bank model is for profit-making businesses owned by poor people, therefore the dividends go to poor (Yunus & Weber, 2007). On one hand, Milton Friedman in 1970 argued that the social responsibility of business comes, before everything else, to maximize profits, because without profit there are no wages paid and no company with a surplus to offer anyone (Pellet, 2008). On the other hand, many business leaders and activists consider that enterprises have a responsibility to support different causes by being good corporate citizens and even such things will eventually benefit the business and investors by bringing high rates of Return on Investment. As an illustration, Mark Manoff – former vice chairman of Ernst and Young notes that more and more partner organizations are recognizing the synergies between agenda items that are socially conscious and shareholder value creation, thus it requires a long-term commitment, but several firms recognize the benefits of initiatives (Pellet, 2008).

Similarly, in another social business model, investors seeking social benefits create special type of company – a social enterprise where the mission of the form is not profit-maximization, but maximization of social indicators. In this second model, dividends are not distributed, and all profits are kept for growth (Yunus & Weber, 2007). Yunus (2007) roots the social business concept in modern-day behavioral realities, where several people do not desire to work with profit maximizing businesses, who aspire to address social and ecological problems and who realise government, NGOs and charity are not the answer. Additionally, Corporate Social Responsibility is limited to what is good for the corporate image and leads to profit maximization, while Social Business alone is outside the profit-seeking world, aims to solve social problems by using business methods such as the creation and sale of products or services (Yunus, 2010, p. 22).

Relevance of social entrepreneurs in rural destination development is also important. It is hard for rural regions to sustain communities and attract tourists. Thus, it is often social businesses that are involved in developing innovative and creative ideas, products and services. Mottiar, Boluk, and Kline (2018) carried out interviews in rural Ireland, USA and South Africa. They

identified that social business leaders are like opportunists, catalysts, network architects, and have significant impact on tourism and rural development (Mottiar, Boluk, & Kline, 2018).

Another research suggested that role of social businesses is essential for empowering women of rural regions. Like other unprivileged groups, women of rural regions can also be vulnerable social groups with high risk of social exclusion and poverty. Simultaneously, research results depicted that women don't lag far behind men with regard to creating new business ideas and following business opportunities. Fortitude, common help and sharing of business threats and obligations, which come with social business, may empower ladies in provincial zones to enter and support in innovative activities (Vidovic, Peric, & Jozanc, 2015).

Our contemporary world also empowers digitalization which is defined as a rise in the usage of computer or digital technology by an organization, industry or country (Brennen & Kreiss, 2016). Albeit digitalization can significantly affect entrepreneurship, there is yet restricted information about its results (Elia et al., 2020). Therefore, more studies are required to see the results of digital transformation and its connection with social businesses more obviously. Furthermore, other than digitalization, social entrepreneurship also can use the process of value co-creation (Lin et al., 2019) which is the joint creation of value by the enterprise and the customers, letting them to co-construct service experience to adjust their needs (Prahalad & Ramaswamy, 2004).

That is why, the theoretical positioning of this thesis is not only embed to the literature of social enterprises; but also, the phenomena of digitalization or digital transformation (hereinafter DT) and value co-creation (VCC) is the other main viewpoints to be looked at. Thus, the aim of this doctoral thesis and 3 studies in it is to investigate the relationships between digitalization and value co-creation in the context of social entrepreneurship. In the initial research, social entrepreneurship, digitalization and value co-creation – three compatible streams of literature – are connected with each other. Resonating with the research objective, Study 1 (Systematic Literature Review) answered the following research question:

- What underlying mechanisms tie **digitalization, value co-creation and social entrepreneurship?**

After the systematic literature review has answered this research question, the PhD research is continued qualitatively with exploratory multiple case studies of social enterprises and in-depth interviews of mostly millennial social entrepreneurs who live and work in the Republic of Azerbaijan.

Therefore, our study creates a knowledge thought theory building in the fields of social entrepreneurship, digital transformation and value co-creation, as well as exhibits insightful research to decrease the discrepancies and gaps in the literature. Thus, this study argues that responses obtained through qualitative methods could provide more depths to the investigation regarding the social entrepreneurship and add novelty to previous literature by contributing the addition of information to business and management. Accordingly, the overall study aims to understand social enterprises, digitalization and value co-creation. Its main objectives are to identify thematic and conceptual connections by revealing insights behind social entrepreneurs' perceptions. From these research objectives, it was vital to answer the following questions in this PhD thesis after the systematic literature review:

- **How digitalization enables value co-creation for social entrepreneurship's development? (Study 2)**
- **How crisis and market turbulence affect the way social enterprises employ digitalization for value co-creation? (Study 3)**

Therefore, this doctoral research is meaningful for both researchers for its theoretical contributions and for social entrepreneurs for its managerial applications. By combining 3 studies, this doctoral dissertation is built up by the methodologies of systematic literature review, multiple case studies and longitudinal case studies. Other than above-mentioned highlighted main research questions, 3 studies in this doctoral dissertation got published in different journals (Table 1).

Table 1. Summary of Studies.

Study	Methodology	Findings and Theoretical Contributions	Publication Status
Study 1	Systematic Literature Review	Finding 1: There is positive relationship among SE, DT, VCC. Finding 2: There is lack of focus in COVID-19's role. We provided Research Agenda with Research Questions for Future Scientific Research.	Published in Budapest Management Review (MTMT A)
Study 2	Multiple Case Studies	F1: Digitalization enables VCC for SE through the new phenomenon, which we call Data-driven Social Co-creation (DSC), and its subcategories such as Efficiency, Resource Mobilization, Feedback Loops and Data Utilization. F2: Digital Strategy Assessments on indicators to measure digitalization's impact.	Published in Society and Economy (Scopus indexed Q3)
Study 3	Longitudinal Case Studies	F1: Interconnected Resilience Framework depicting mechanisms connecting Crisis, Market Turbulence and SE's Digital Collaboration. F2: Event-ordered Matrix for Crises' Impact on Social Enterprises.	Published in Budapest Management Review (MTMT A)

Source: own compilation

In detail, the main specific purpose of this thesis work is to find the theoretical connation that tie SE, DT and VCC during crises, and our Figure 1 is coherent with this aim. The presented research and its results can eventually provide insightful information for entrepreneurs who

want to improve their products or services and communicate effectively with employees, according to their needs. This topic is very important because the findings can be particularly beneficial because this research will not be based only on secondary data, but also primary data of respondents in the form of face-to-face interviews.

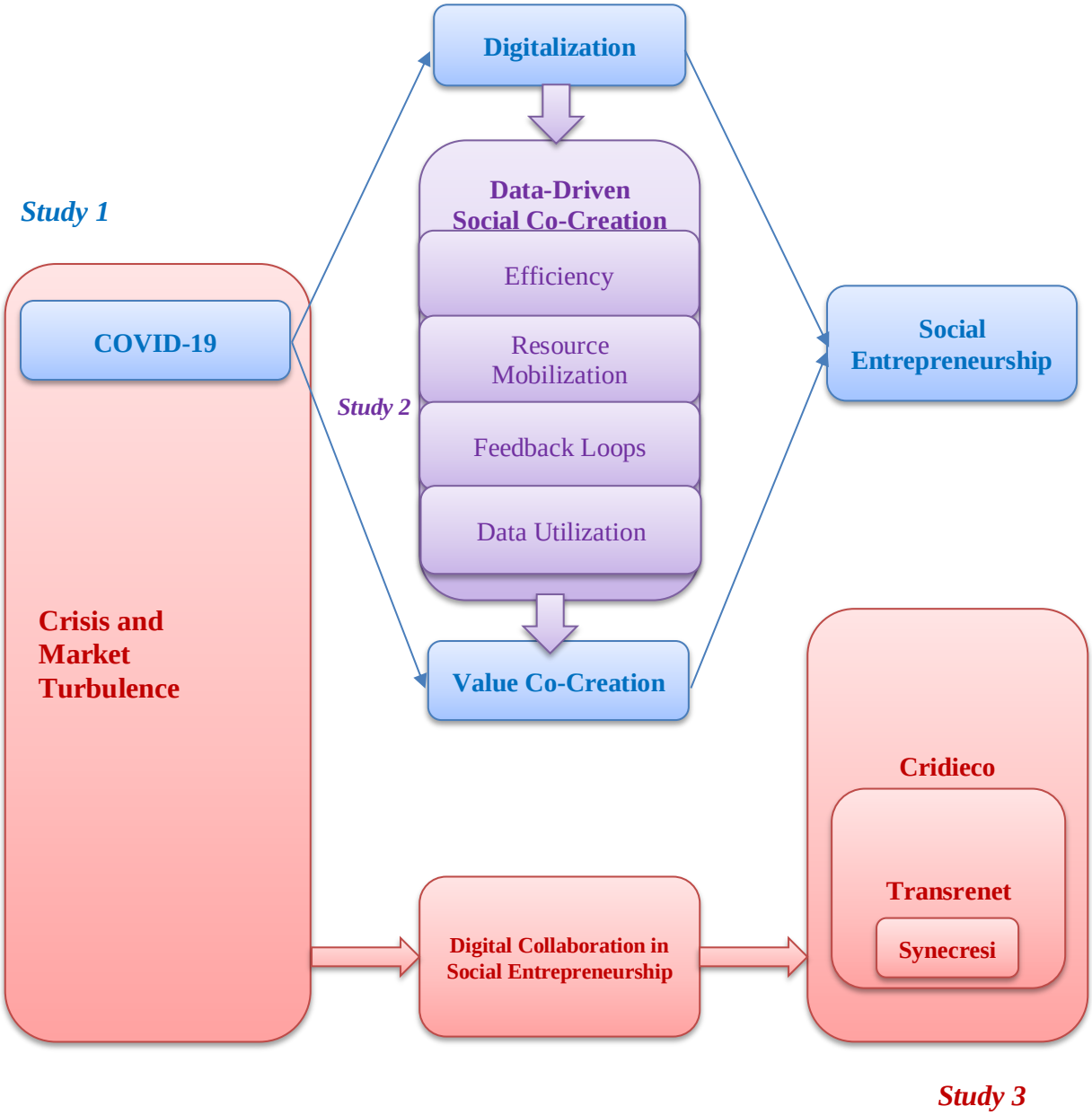

Fig. 1. Structure of Dissertation: Connecting Study 1 (outer blue), Study 2 (inner purple) and Study 3 (outer red).

We created Figure 1 to show the structure of this dissertation, as well as the connection between our three studies. Starting with the elements of "COVID-19", "Digitalization", "Value Co-Creation" and "Social Entrepreneurship" which are outer blue parts, we can easily summarize

Study 1 and mention that our systematic literature review analysis revealed that **COVID-19 affected Digitalization and Value Co-Creation which impacted Social Entrepreneurship.** Digitalization decreased COVID-19 challenges (Zahra, 2021) and increased collaborations for social enterprises (Loukopoulos & Papadimitriou, 2022). The COVID-19 pandemic caused a lack of government action, leading to increased social initiatives and digital social entrepreneurship to improve stakeholder satisfaction (Ibáñez et al., 2022). If we connect these findings, we can easily sense that COVID-19 increased the level of digital transformation, and digitalization positively affected the performance of social enterprises. The pandemic also raised social value co-creation, such as seed plant initiatives and reducing homelessness: Governments, social enterprises, and homeless people have come together to create new benefits that address the pandemic's negative impacts in which the value co-creation processes have been catalyzed, and as a result, increased focus on social entrepreneurship (Ratten, 2022). We can conclude that the pandemic caused the value co-creation process in the context of social entrepreneurship.

Continuing with the elements of "Digitalization", "Value Co-Creation"; "Data-driven Social Co-creation" and its subcategories "Efficiency", "Resource Mobilization", "Feedback Loops", as well as "Data Utilization" which are inner purple parts, we can easily summarize Study 2 and mention that Digitalization enables value co-creation in social enterprises through Data-Driven Social Co-Creation and its subcategories. This new term of Data-driven Social Co-creation can be defined as analyzing data to identify trends, preferences, and areas for improvement via continuous feedback and using data insights to co-create tailored solutions that address specific stakeholder needs in social entrepreneurship and contribute to the solution of social or ecological problems (Mursalzade, 2024).

Finishing the Figure 1 with the elements of "Crisis and Market Turbulence", "Digital Collaboration in Social Entrepreneurship" and Resilience related concepts such as "Cridieco", "Transrenet" and "Synecresi" which are outer red parts, we can summarize Study 3 and mention that Crisis and Market turbulence increased Digital Collaboration in Social Entrepreneurship; Digital Collaboration in Social Entrepreneurship increased Resilience related 3 new concepts; and there is interconnected connection between Cridieco, Transrenet and Syencresi. Crisis-Resilient Digital Ecosystem (Cridieco) is an ecosystem where social and ecological enterprises thrive during and after crises by embracing crisis-responsive entrepreneurial mindset and digital transformation. Transformative Resilience Network

(Transrenet) is a phenomenon focusing on how social enterprises' networks transform challenges into opportunities through collective resilience and empowers value co-creation within communities while adopting agile work practices for navigating crises. Synergistic Economic Resilience (Synecresi) is defined by a synergy between agile work environments and economic market considerations, suggesting that synergy is occurring where social enterprises are creating economic resilience in the market through digitalization and value co-creation: It implies that the social entrepreneurs having digital collaboration are more resilient against the crises, thanks to agile work environments and due to economic market considerations. Since COVID-19 is also one example of Crisis, it is inside of "Crisis" element in Figure 1.

Results of this ambitious project can lead to previously unimaginable increase in socio-economic output, bring new ideas that will lead to innovation – better solutions to existing problems and problems we did not even know we had. In that matter, it is in our best interest that unprivileged and marginalized communities in obscure districts are prospering. Because nature of innovation is fundamentally driven by supply and demand.

The supply increases when more people have knowledge and skills to contribute. If smart citizens have much better education, they may become inventors, researchers or thinkers that come up with new ideas. Demand for ideas, increases as people get richer and can pay for new solutions. They increase size of developed markets for innovations. So naturally, if many people want and can pay for something, it will get the innovators' attention and create Multiplier effect. In microeconomics, Multiplier effect shows that first rise in aggregate demand causes to ultimate increase in national income (Sloman et al., 2018, p. 499).

Economic growth increases demand for ideas while making it easier for ideas to be produced. It can be imagined that how far social entrepreneurship and research related to it could have developed if world had invested 3 times as much as in sustainable economies; or how our economy could go further if more social enterprises were interested in digitalization and value co-creation.

On top of that, currently, there is so much human potential being wasted in suburb regions of the Republic of Azerbaijan where the primary data of this PhD research gathered from. The work of poor carpet-knitters in a developing nation such as Azerbaijan may not seem useful to

Hungary, but if those women become better off, their children might spend their time in university developing things that are useful to Hungary. Instead of having some hotspots of digitalization and innovation centers in the developed western part of Europe, we would have many hotspots all over the continent including Eastern parts. In this term, research projects funded by the Hungarian Government – Stipendium Hungaricum scholarship programs are very remarkable for development of these regions and academic cooperation. Hungary would not gain more, if undeveloped and unresearched parts of Azerbaijan stayed the same. The faster we get to this version of Europe, the better for our continent personally.

2. Study 1: Systematic Literature Review

"Digitalization and Value Co-Creation in the context of Social Entrepreneurship"

Study 1 aims to understand the connections between digitalization, value co-creation and social entrepreneurship. The study also aims to identify future research areas related to these connections. We conduct a systematic literature review of 61 journal articles and synthesize their findings. First, we reveal literature gaps: Regarding the first research gap of the connection, our research has identified themes connecting the three streams of literature (digitalization, value co-creation, and social entrepreneurship) that need improvement. Second gap was a lack of COVID-19 focus. Finally, we provide theoretical contributions and recommend directions for future research on digitalization, value co-creation and social entrepreneurship.

• 2. 1 | Introduction of Study 1

Social entrepreneurship is the process of finding ways to increase innovations, utilizing resources, and addressing social needs to create social value (Wu et al., 2020). Social entrepreneurship is gaining more and more attention from scholars and practitioners. The main aim of social businesses is prosperity and positive change in society (Dacin et al., 2010). Social entrepreneurship is a business venture that might be pointed toward profiting society as opposed to only maximizing individual benefits, and it seems to guarantee an altruistic version

of capitalism that does not assess all human exercises in business terms (Roberts & Woods, 2005). Unlike traditional entrepreneurship, social entrepreneurship focuses on generating social impact alongside financial returns, aiming to balance altruistic motives with economic sustainability (Peredo & McLean, 2006). Over the past few decades, social entrepreneurship has gained increasing attention from both scholars and practitioners due to its role in tackling societal challenges thorough sustainable business practices (Mair & Marti, 2006; Zahra et al., 2009).

Our contemporary world also empowers digitalization, defined as a rise in computers or digital technology usage by an organization, industry or country (Brennen & Kreiss, 2016). Although digitalization can significantly affect entrepreneurship, there is yet restricted information about its results (Elia et al., 2020). Digital transformation has significantly reshaped entrepreneurial ecosystems, offering new ways to enhance efficiency, communication, and access to markets (Nambisan, 2017). Digitalization can affect entrepreneurship in multiple ways, including improving scalability, reducing operational costs, and fostering global connectivity (Autio et al., 2018; Kraus et., 2019). Therefore, more studies are required to see the results of digital transformation and its connection with social businesses more obviously. Furthermore, other than digitalization, social entrepreneurship also can use the process of value co-creation (Lin et al., 2019), which is the joint creation of value by the enterprise and the customers, letting them co-construct service experience to adjust their needs (Prahalad & Ramaswamy, 2004). In social entrepreneurship, co-creation fosters collaboration with beneficiaries, donors, governments, and private sector actors to create scalable and sustainable solutions for social challenges (Ramaswamy and Ozcan, 2018). By integrating co-creation into their business models, social entrepreneurs can achieve more significant social impact while ensuring long-term engagement from diverse stakeholders (Reypens et al., 2021).

There is usually synergy between the three, which increases the positive impact of each: Digitalization makes communication easier, help social entrepreneurs co-create value with diverse stakeholders; secondly, connection holds potential for social change: Technologies help social entrepreneurs for delivering value to beneficiaries, while also enabling them to make new solutions, and adapt to different changing needs (Murdock and Lamb, 2009; Srivastava & Shainesh, 2015; Wilson et al., 2017; de Bernardi et al., 2019; Goyal et al., 2021; Wan & Liu, 2021; Aisaiti et al., 2021; Loukopoulos, & Papadimitriou, 2022; Chandna, 2022). Last, but not least, 3 concepts are all closely aligned with the United Nations' Sustainable Development

Goals. Digitalization can accelerate progress towards achieving the SDGs by enabling access to education, healthcare, financial services, and other necessities; Value co-creation fosters collaboration and partnerships, which are essential for addressing complicated world problems; Social entrepreneurship aims to create positive social and environmental impact through innovative and sustainable business models (Lin et al., 2019; Ratten, 2022; Ceesay, Rossignoli, & Mahto, 2022).

That is why this study's aim is to conceptualize digitalization and value co-creation in the context of social entrepreneurship. In this research, social entrepreneurship, digitalization and value co-creation – three compatible streams of literature – are connected with each other. Resonating with the research objective, this study tries to answer the following research question: What underlying mechanisms tie digitalization, value co-creation and social entrepreneurship?

The methodology that we applied is a systematic literature review focusing on peer-reviewed international articles regarding social entrepreneurship, digitalization and value co-creation. The review process had three phases and followed the well-established guidelines of systematic literature reviews (Tranfield et al., 2003). To explore the literature, the research design is framed with 1) article identification, 2) selection of relevant articles, and 3) qualitative analysis of papers.

• 2. 2 | Methodology of Study 1

We conducted a systematic literature review of the literature on social entrepreneurship, digitalization and value co-creation. The review process had three phases and followed the well-established guidelines of systematic literature reviews (Tranfield et al., 2003). To explore the content of the literature on digitalization and value co-creation in social entrepreneurship, the research design is framed as follows: Article identification, Selection of relevant articles, and Qualitative analysis of papers.

• 2. 2. 1 | Article Identification

To provide a sound background for this study, peer-reviewed articles published in international journals in English were focused on. This is standard practice since these sources are accepted as 'certified knowledge' and strengthen the findings' reliability (Cuccurullo et al. 2013; Fernandez-Alles and Ramos Rodriguez 2009; Rashman et al. 2009; Sarto et al. 2014; Torchia et al. 2013). The initial stage aimed to identify related journals and potentially related articles in databases such as Scopus and Web of Science. To answer the key question of our literature review, we conducted systematic research for the strings "social entrepreneurship", "digitalization" and "value co-creation". We took notes of the technical aspects, such as a list of the keywords, query ID, and query string. We searched for synonyms or words that identify the same phenomenon. In the case of value co-creation, it was "value creation" OR "value co-creation" OR "VCC". In the case of digital transformation, "digit*" was used. The asterisk symbol is a function that is used when the desire is to search for words with the same root, however different endings: "digit", "digitalization", "digital", "digitalized", "digital transformation", "digitalizing", and so on. We followed the same procedure with social entrepreneurship. "Social" AND "entrepreneur*" has been tried. Our search strategy included studies that contain any of these words in the title, abstract or anywhere in the main body of the study, tables, figures or appendices. These searches resulted in a total of 257 potentially relevant studies.

Table 1. Systematic Literature Review Process

Phase 1: **Article Identification (n=257)**
Main domains of interest and the aim of systematic literature review: Finding the gap between Digitalization, Value Co-Creation and Social Entrepreneurship
Search for potentially relevant papers (n=257) according to main domains of interest: **Period:** No limitations (Data gathering ended in 2022) **Search String Keywords:** "social entrepreneurship" AND "digitalization" "social entrepreneurship" AND "value co-creation" "social entrepreneurship" AND "digital transformation" "digital" AND "social enterprise" "social entrepreneur*" AND "value co-creation" "social entrepreneur*" AND "digit*" "eco entrepreneurship" **Search Scope:** Title, Abstract, Keywords **Databases:** Scopus, Web of Science
Phase 2: **Selection of Relevant Articles (n=61)**
Creating Exclusion Criteria: 1. Low-ranked academic journals such as Q3-Q4, according to scimago.com 2. Duplication 3. Not in English articles 4. Articles with no free accessibility or not accessible in full version (only abstract) 5. Different format types such as books, book chapters, conference proceedings, forum papers, summit reports, research proposals **Development of detailed coding scheme and coding relevant (n=61) papers:** Theoretical positioning, Definition of core concepts in the articles, Method: Data type, Country of data origin, Industry, Key informants who data collected from, Sample size, Method of analysis, Key insights, or summary of the main findings
Phase 3: **Analysis of Papers**
Overview of the body of literature: Paper distribution by year, key theories, region of data gathering, methodology **Proposed Framework:** Creating a model incorporates concepts from previous studies and groups in a meaningful way **Identification of research gap and direction for future research**

- **2. 2. 2 | Selection of Relevant Articles**

The second phase aimed to examine the relevant identification and preliminary coding of articles. To provide a solid platform for relevancy identification, we established detailed criteria for inclusion. The articles were included if published in highly ranked academic journals (Q1 and Q2 according to the Scimago Journal Rank, https://www. scimagojr.com/). We discarded low-ranked academic journals such as Q3-Q4 according to the Scimago journal ranking list. We identified the duplicates and made the first screening by reading the titles and the abstracts. Then, we discarded the duplicates alongside with articles which were not in English. Book, book chapters, conference proceedings, forum papers, summit reports, and research proposals were discarded too. Additionally, we also discarded 5 journal articles with no free accessibility or not accessible in full versions having only abstracts available. In the end, there were 61 articles left.

- **2. 2. 3 | Analysis of Articles**

At the third stage, we developed a detailed scheme for relevant papers, by which we coded every relevant paper. This coding scheme was the data repository from which subsequent analysis emerged; hence, the content was directly linked to the formulated review question and the planned assessment of the incorporated studies. In the coding scheme, we recorded the theoretical positioning of the relevant papers, the methodological approach, including data type, country of origin, industry context, key informant whom data was collected from, sample size, method of analysis, key insights and main findings. Then, on the basis of key insights and main findings from 61 chosen articles, we had subsequent narrative literature analysis. First, the connection between digitalization and social entrepreneurship was revealed, followed by the connection between value co-creation and social entrepreneurship. Second, we tried to connect these three streamlines by revealing a gap in the literature which shows the direct relationship between digitalization, value co-creation and social entrepreneurship. In the end, we proposed two theoretical frameworks and a research agenda for future research.

- **2. 3 | Findings of Study 1: "Connecting the Three"**

This section summarizes previous research and studies on the subject matter and presents existing gaps in the literature. After giving literature statistics, the first section shows generic findings regarding the connection between digitalization and social entrepreneurship; then, the second section investigates the connection between value co-creation and social entrepreneurship. Since there is a gap between these three streamlines of literature, the third section tries to synthesize available knowledge in the literature and proposes 2 theoretical frameworks for future research and a table for managerial applications of digitalization and value co-creation in the context of social entrepreneurship.

The literature statistics are summarized in Table 2. Asian studies represent 36%, Europeans 32.7%, and North Americans 4.9%, with a share of 1.6% both in Australia and South America, while 9.8% of the overall studies were originating from multiple continents. The rest did not specify the place of origin. There were several industries, including hospitality, health, education and retail, but most of the companies were also social or ecological enterprises, which is why we did not go into the deeper specific classification of industries, and it was not placed in Table 2. Most of the chosen studies – 59% to be exact, were from Q1 journals, while the rest, 41%, were from Q2 articles. When it comes to analytical methods of the studies, we can say that qualitative methods were in the lead with 65.5% and followed by quantitative ones with 31.1% and mixed studies applying both qualitative and quantitative methods with approximately 3.4%. Article distribution by sample size for quantitative and mixed studies were mostly 500 and over. The rest of the sample sizes of quantitative and mixed studies were either between 100-200 or 200-500, while the less frequent sample size was below 100.

Table 2. Literature Statistics (n=61)

(Search words: Digitalization, Value Co-Creation, Social and Eco Entrepreneurship, Q1-Q2)

Article distribution by geographies	
Asia	22
Europe	20
North America	3
Australia	1
South America	1
Multiple	6
Not Defined	8
Article distribution by journal ranking	
Q1	36
Q2	25
Analytical method	
Qualitative	40
Quantitative	19
Mixed	2
Article distribution by sample size	
for Quantitative and Mixed studies	
Below 100	3
100-200	5
200-500	6
500 and over	7
Adjacent theories appeared by frequency	
Institutional theory	8
Stakeholder theory	5
Grounded theory	4
Theory of bottom of pyramid (BOP)	3
Crisis theory	2
New Institutional Theory	2
Organizational identity theory	2
Social capital theory	2

Adjacent theories appeared in multiple articles by frequency were institutional theory, stakeholder theory, grounded theory, theory of bottom of pyramid (BOP), crisis theory, new institutional theory, organizational identity theory and social capital theory. The institutional theory most frequently appeared, and it was mentioned in 13% of chosen articles. It was followed by stakeholder theory, grounded theory, theory of bottom of pyramid (BOP), and they

were common in accordingly 8.1%, 6.5%, and 4.9% of the chosen articles.

- **2. 3. 1 | Digitalization in the context of Social Entrepreneurship**

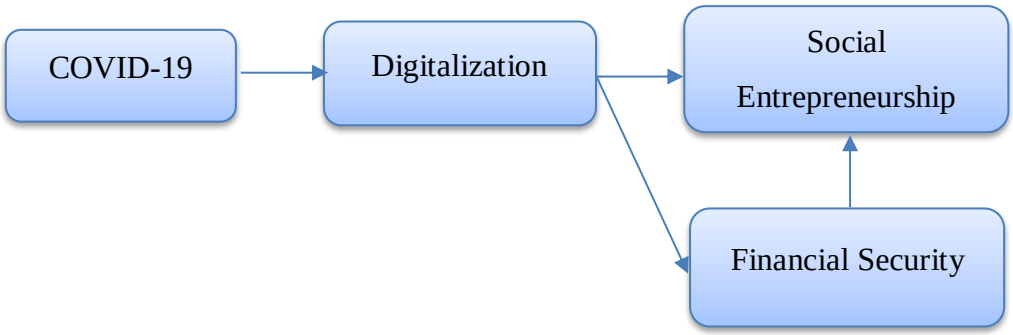

Fig. 1. Digitalization in the context of Social Entrepreneurship

- **2. 3. 1. 1 | Digitalization in SE: The COVID-19 impact**

In the post-COVID world, enterprises need agility and speed to support their human capital and knowledge base while reducing costs (Kuckertz et al., 2020). Speed of learning can help identify new market niches, define products to develop, and find new ways to communicate with customers (Zahra, 2021). Digital technologies like 3-D printers can enable entrepreneurial opportunities, while social entrepreneurs typically face challenges of social and financial sustainability (Jean, Kim, & Cavusgil, 2020; Williams, Du, & Zhang, 2020; Langley et al., 2017).

Digital technologies have enabled some social enterprises to maintain connections with established business platforms to address the challenges posed by COVID-19 (Zahra, 2021). Analysis of 128 social enterprises in a post-pandemic period in China shows that digital transformation can positively affect organizational identity (Aisaiti et al., 2021). A case study of eKutir (a social enterprise that uses a digital platform to deliver value for farmers in India) reveals that stakeholder stability and incentives are key factors contributing to the adoption of digitalization (Sengupta et al., 2021). Another post-pandemic research depicts that during COVID-19, the organizational scaling of Greek social enterprises embraced social impact through widening services and building collaborations in local and remote markets through digitalization (Loukopoulos & Papadimitriou, 2022). Digital hybridity - the phenomenon of

deploying digital innovation to blend social and financial impacts - has enabled sustainability in social entrepreneurship (He et al., 2022).

There are several research focusing on how digitalization develops into agile marketing capabilities (Moi et al., 2019), because digital businesses show an agile response to modern-day challenges (Kraus et al., 2018; Nambisan, 2017), while social businesses can be flexible and solve societal issues (Mair & Marti, 2006). Battisti's (2019) framework considers socially relevant groups in the entrepreneurial innovation and digital process, while Ibáez et al. analyze social entrepreneurship and digitalization from a COVID-19 perspective (Ibáñez et al., 2022).

Investigations of nascent entrepreneurship can help to explain why individuals might decide to launch their own businesses, which can have a substantial impact on economic development and job opportunities (Szabo and Aranyossi, 2022). Worldwide Coronavirus lockdowns have expanded the development of the Digital Social Entrepreneurship which was fulfilling social requirements by utilizing advanced digitalization (Yáñez-Valdés et al., 2023). Ghatak, Chatterjee & Bhowmick (2020) reveals reasons of intention towards digital social entrepreneurship as experiences in social enterprise and digital firm, and empathy, moral obligation, self-efficacy, perceived social support, feasibility and desirability mediate these relationships. The pandemic increased social initiatives, which were rich in innovation for the unsatisfied needs by the government, and due to economic agents seeking altruistic goals to transfer technology to the most vulnerable (Ibáñez et al., 2022).

The COVID-19 pandemic has significantly accelerated the adoption of digital technologies across various sectors, including social entrepreneurship and social entrepreneurs who aim to address societal challenges through innovative and sustainable solutions, have increasingly empowered digitalization to enhance their impact during crisis (Nakpodia et al., 2024). The pandemic has also given rise to the concept of Digital Social Entrepreneurship (DSE), which represents the intersection of digital entrepreneurship and social entrepreneurship, involving entrepreneurial initiatives with social objectives that integrate digital technologies into their business models, often emerging in response to crises like COVID-19 (Ibáñez et al., 2023). This phenomenon highlights the adaptability and innovation of social entrepreneurs in strengthening digital platforms to address emergent societal needs.

Research indicates that social entrepreneurs have utilized digital technologies to navigate the disruptions caused by pandemic effectively: A study focusing on Nigerian social enterprises identified 19 pathways through which digitalization facilitated organizational resilience (Nakpodia et al., 2024). These pathways enabled social enterprises to build proximate, dynamic, and continuous resilience within a weak institutional context, highlighting the critical role of digital tools in crisis adaptation.

Despite the opportunities presented by digitalization, challenges such as digital divide persist within the social entrepreneurship sector: Limited resources and digital skills gaps hinder the ability of social enterprises to fully capitalize on digital advancements, affecting their competitiveness and sustainability (Santos et al., 2023). Addressing these challenges requires tailored policies and support mechanisms to bridge the digital divide and empower social entrepreneurs in digital era.

The usage of digital platforms during the COVID-19 pandemic has facilitated transformational entrepreneurship, enabling social entrepreneurs to achive financial, social and community goals: For example, the "ClickforVic" digital platform in Melbourne, Australia connected rural farmers with urban consumers during lockdowns, exemplifying how digital platforms can drive societal change and support entrepreneurial resilience in times of crisis (Ratten, 2023). With this, once again the COVID-19 pandemic has highlighted the pivotal role of digitalization in enhancing the effectiveness of social entrepreneurship. While digital technologies offer significant opportunities for innovation and impact, addressing challenges such as digital divide, it is essential to ensure that all social enterprises can harness the full potential of digitalization in their mission to address social and ecological problems.

- **2. 3. 1. 2 | Financial Connection between DT and SE**

Social entrepreneurship literature usually conceptualizes the phenomenon as a business case where companies utilize financial means to solve social problems or combine the two aims (Battilana and Lee, 2014; Powell et al., 2019). On the contrary, there are fewer studies on how these contradictory aims impact the motivation to open a social business (Chandra, Man Lee & Tjiptono, 2021). One of these studies shows that drive to help society and to have financial gains are influential factors (Chandra, Man Lee & Tjiptono, 2021). Poverty, inequality, climate

change, health, education, and human rights are just a few of the most pressing issues we face today, and digitalization of social enterprises has the potential to provide novel and efficient solutions more quickly to the above-mentioned problems. However, the motivation for public service is more powerful than money ethics (Chandra, Man Lee & Tjiptono, 2021).

Research on corporate social entrepreneurship offers individual actions to overcome economic challenges such as curbed earnings, unsafe work, and low levels of business initiatives, and the case study widens the knowledge-based perspective for digital social entrepreneurship, where fundamental knowledge stems from the personal life of the actors involved in the project (Scuotto et al., 2022). Starting a social business is mainly impacted by one's caring about social issues, not wanting to be successful in commercial terms or skills to handle finance: The creation of values such as aspiration to help society is more important; accounting or financial abilities should be learned afterwards (Chandra, Man Lee & Tjiptono, 2021).

Research conducted by Aisaiti et al. (2019) found that knowledge of inclusive finance and social entrepreneurship increases benefits, decreases risk perceptions, and is essential to promote social businesses and digital finance to develop inclusive finance in rural China: Attitudes such as thinking about new ways to do things, digital innovation thinking, and having an intention to make a difference are important for starting a social enterprise, but risk perception was not as influential as other things due to increasing operating costs (Herlina et al., 2021). To make social businesses achieve their social missions, it is important for social business, government, and research institutes to increase their cooperation to continuously gain farmers' trust and the recognition of social businesses' value (Aisaiti et al., 2019).

Crowdfunding is a financing source for social enterprises, with four types of project creators: social entrepreneur, fund seeker, indie producer, and daring dreamer based on four motivations: achievement, monetary need, pro-sociality, and relationship building. (Ryu & Kim, 2018). Due to unique hardships, crowdfunding's usage is still limited in social entrepreneurship. However, Chandna (2022) suggests remobilizing idle resources using digital platforms to support social enterprises by securing assets and connecting stakeholders. Digitalization benefits financial security, allowing social enterprises to perform better and contribute to the solution of some problems in Spain (Martín, 2020). Even though IT support for marketing activities – both in Hungary and abroad – is below the average of other company specialties (Keszey, 2007), research on ownership of information systems also depicted that that organizational factors in

foreign businesses and environmental factors in domestic businesses both influence perceptions (Keszey, 2017).

Researchers conducted a case study of 30 Dutch-based cryptocurrencies to reveal social innovators' motives and found that digital money systems can be considered social innovations, but their potential for disruptiveness is curbed by design: Money governance could be improved by implementing digital public token-based design and other digital instruments (van der Linden and van Beers, 2017). Social businesses in Indonesia and Singapore have networked with impact investors, suggesting strategic communication through digital technologies to improve them: These approaches, such as facilitating open digital communication between social companies and angel investors, guarantee funding and force the social investment marketplace to improve (Ryder & Vogeley, 2018).

- **2. 3. 1. 3 | Digitalization's Performance increasing impact on SE**

Other than finance-related aspects, there are other impacts of digital transformation on social entrepreneurship, such as digitalization decreasing the time spent or increasing health provisions. In this subsection, we show these other impacts.

Social businesses' digital context from profit-oriented companies is different from traditional firms (Benmamoun et al., 2021). By default, social entrepreneurship is very distinct from for-profit companies (Dees, 1998; Mair and Martí, 2006), their online presence is also distinct from their offline one, and in field operation of foreign countries, social businesses take advantage of adapting to local environment (Zahra et al., 2008; Volery, 2010; de Arruda and Levrini, 2015); however, when using websites, they take advantage of standardizing rather than localizing to the service areas (Benmamoun et al., 2021). Thus, improvement in theory should take into account mediums such as websites, social media, and in-person, which have different intentions and results (Benmamoun et al., 2021). Also, social enterprises should consider their target audience when developing an international website rather than copying traditional companies' practices based on consumer culture and language (Benmamoun et al., 2021).

Research is being done to examine how agri-food companies use digital data and how their behavior changes depending on the type of data they are utilizing in the creation of their products (Frau & Keszey, 2023). In order to get cleaner food production, companies should

use nature-driven agility – company's "ability to flexibly and effectively utilize natural resources to adapt the full production process to market changes and capture new value-creation opportunities within nature constraints" (Frau et al., 2022). Research by Frau, Moi, Cabiddu & Keszey (2022) revealed that nature-driven agility is based on digitalization. Carroll & Casselman's (2019) research on cause-based voluntary service reveals that digitalization reduces uncertainty, expenses and time spent by allowing social enterprises to conduct advanced experiments. Research on Food Assembly, which connects social entrepreneurship and digital innovation to achieve sustainability and a high social impact, reveals that sharing online knowledge impacts sustainable buying and consuming, while on-site knowledge impacts sustainable buying (de Bernardi et al., 2019). Moreover, Goyal, Agrawal, & Sergi (2021) research social businesses to solve water, sanitation, and waste management problems in India's urban areas and show how digital technologies can be used to increase reach, efficiency, transparency, social inclusion, connection, and decrease expenditures, especially in rural regions.

Research in 155 Chinese social enterprises reveals that social businesses should use big data to improve employee performance and increase vitality in their businesses (Wan & Liu, 2021). Circular economy principles contribute to societal transformation through innovation, digital solutions, blockchain technologies, and their social results to address environmental challenges (Ilic et al., 2022). Similarly, AI-based innovation can reduce social problems, increase work performance, and create new business models through value co-creation (Battisti et al., 2022).

Digitalization solves healthcare access divide in developing societies by increasing geographical accessibility, decreasing expenses, making services inclusive, and technology creates service-centric value by increasing geographical accessibility and decreasing expenses. (Srivastava & Shainesh, 2015). Similarly, Poveda et al. investigate one social enterprise's digital skills training contribution and reveal that it can improve the health conditions of people and provide health services in the Philippines, complementary to public health government programs (Poveda et al., 2019). Wilson et al. (2017) mention that digitalization and use of information and communication technologies facilitate healthcare for elderly Italians in the municipality. Furthermore, Murdock and Lamb (2009) state that Digitalization of the Royal National Institute for the Deaf improved their service quality. Other than the health sector, digitalization also affects eco enterprises in education. As an illustration, Pakura (2020) showed that green-tech startups can benefit from technological advancement through partnerships and

firm development.

- **2. 3. 2 | Value Co-Creation in the context of Social Entrepreneurship**

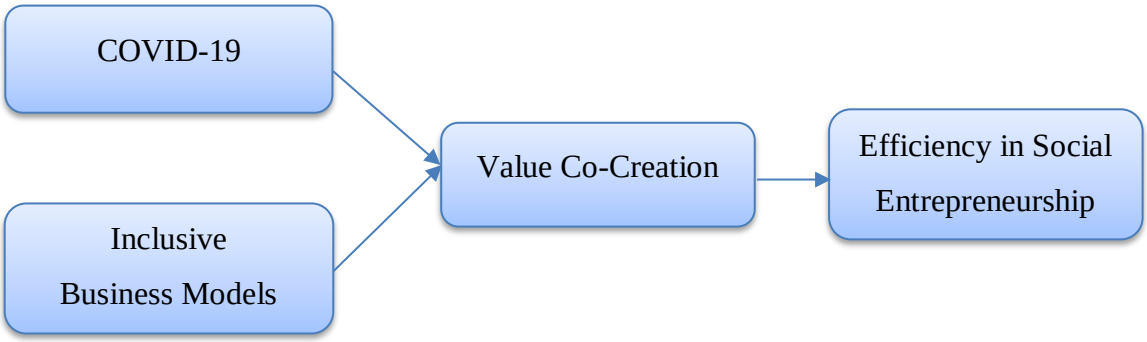

Fig. 2. Value Co-Creation in the context of Social Entrepreneurship

- **2. 3. 2. 1 | VCC and SE: The COVID-19 impact**

The outbreak of COVID-19 has caused a surge in digital products and services, one of which is the streaming of theatrical performances online: This new market has opened a host of possibilities for businesses, all while providing customers with an alternate way to enjoy their favorite theatrical productions (Aranyossy, 2022).

The COVID-19 pandemic also caused social difficulties due to the need to think globally and locally. This had a significant effect on social policy, and policymakers must use social entrepreneurship and value co-creation strategies to address the issues (Ratten, 2022). A social value co-creation perspective can be used to address the COVID-19 crisis, and according to Di Domenico et al. (2010), social value creation is a link between traditional commercial entrepreneurship and those that take a more societal approach to profit making.

COVID-19 raised levels of co-creation of social value to generate novel benefits for society (Ratten, 2022). Thus, since the government is responsible for providing resources to those affected by natural disasters (Frydman & Phelps, 2020), short-term accommodations have been used for activities that generate profits, allowing them to be used for social causes (Ratten, 2022).

Empirical evidence highlights the effectiveness of co-creation during the pandemic: An OECD report analyzing 30 international co-creation initiatives implemented in response to pandemic reveals that pre-existing networks and digital technologies were instrumental in rapidly addressing urgent needs (de Silva et al., 2022). These initiatives demonstrate that when stakeholders work together, using digital tools and existing collaborations, they can create innovative solutions to pressing social issues such as food security, healthcare access, and economic recovery.

Despite the benefits, the shift towards digital co-creation poses challenges, including digital literacy disparities and resource constraints among stakeholders: Sharma (2021) emphasizes that customer capabilities and institutional barriers significantly influence the effectiveness of service co-creation during crisis, highlighting the need for inclusive strategies that address these problems. Additionally, there is a risk of over-reliance on technology, which may exclude vulnerable populations with limited digital access.

The accelerated adoption of digital tools during pandemic has further facilitated value co-creation. Digital platforms have enabled businesses to engage stakeholders, share information, and co-develop solutions despite physical distancing measures: Polese et al. (2022) discuss how digitalization enhances communication and collaboration, thus fostering value co-creation in sectors such as restaurant management. Overall, pandemic emphasized the importance of value co-creation as a strategic approach to navigate crises, respond to social and economic challenges, ensuring inclusion and addressing access disparities which remain critical. As social enterprises continue to adapt to the evolving landscape, fostering inclusion and innovative co-creation strategies will be essential to address complex challenges effectively.

- **2. 3. 2. 2 | VCC and SE: Social Value Co-Creation in Inclusive Business Models**

Studies in service research have highlighted the importance of value co-creation in the B2B environment (Cabiddu et al., 2019). Literature on social entrepreneurship provides a limited understanding of how to generate social value (Sigala, 2019). It's heavily researched from three major streams of research: entrepreneurial behavior (Dees, 1998; Mort et al., 2003); entrepreneurs' characteristics (Dees, 1998; Kline et al., 2014); and social entrepreneurships'

results measuring (Sigala, 2019). Social entrepreneurs need to develop network structure, market practices and market pictures to generate social value (Sigala, 2016). Similarly, studies need to study value co-creation from "sense-of-meaning" approach (Sigala, 2019). By involving customers in value co-creation, social entrepreneurs can ensure their businesses creating meaningful social change.

A case study of Italian social businesses for researching value co-creation shows that involvement of all critical actors in cause-based network increases commitment to address society's problems, enhancing social legitimacy (Ceesay, Rossignoli, & Mahto, 2022). Bendickson (2021) found that advanced knowledge of collaborative value practices of social entrepreneurship alliances can enhance SME managers' collaborative capabilities for enhancing their performance (Taylor and Thorpe, 2004).

To highlight the connection between value co-creation and social entrepreneurship, we focus on inclusive business models. Schoneveld's (2020) definition emphasizes involvement of people with limited revenue and value co-creation through solving social problems. It doesn't have profit maximization goal but has potential to make net value for people with limited revenue and create complementary revenue sources (Schoneveld, 2020).

- **2. 3. 2. 3 | VCC and SE: Increased Efficiency**

Social entrepreneurial self-efficacy is a concept elaborating human behavior towards social missions that affect one's beliefs, efforts, levels of input, and persistence (Dwivedi & Weerawardena, 2018). Sam Liu and Huang (2020) gather data from 386 firms in Taiwan, investigate social entrepreneurship's role in value co-creation processes among many others and depict that social entrepreneurial self-efficacy positively moderates the different relationships among proactiveness, market orientation and value co-creation.

Even though there are some studies focusing on value co-destruction - adverse results of value co-creation (Frau et al., 2018), Abedin, Maloney & Watson (2021) study both the advantages and disadvantages of online communities for value co-creation by social entrepreneurs and reveals that improved access, time-cost efficiency, raised response rate, and networking are among the advantages, while capacity absence, not enough moderation, inactivity and effort

fragmentation are disadvantages. Social entrepreneurs concentrate on social value creation for their target group, incorporate social values into their innovations, and guide collective stakeholder action to improve their solutions (Lubberink et al., 2019).

OurCityLove is an example of a social business using value co-creation to increase service quality and accessibility for mobility-impaired persons, and research by Lin et al. (2019) shows that value co-creation increases restaurants' awareness of giving friendly experience, mobility-impaired people's chance to help the investigation and contribute valuable insights to the application, and government can increase mobility impaired people's satisfaction by motivating restaurants with friendly restaurant certification. Social enterprises can use value co-creation to involve supply and demand sides, and government policymakers can also be engaged in this value co-creation process (Lin et al., 2019).

- **2. 3. 3 | Connecting DT, VCC and SE**

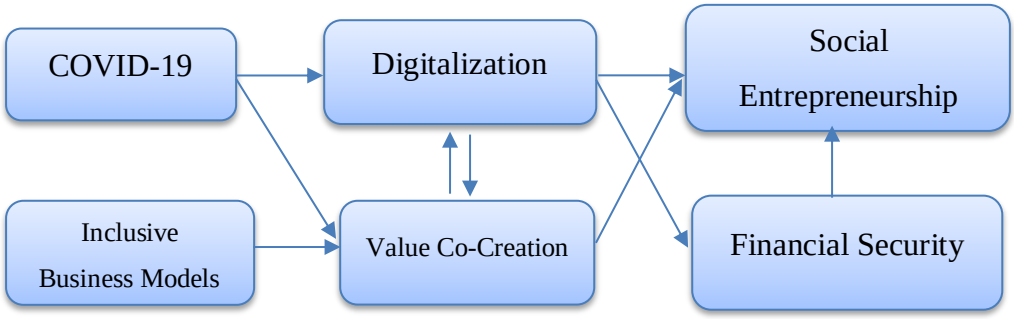

Fig. 3. Connecting Digitalization and Value Co-Creation and Social Entrepreneurship

Digitalization decreased COVID-19 challenges (Zahra, 2021) and increased collaborations for social enterprises (Loukopoulos & Papadimitriou, 2022). The COVID-19 pandemic caused a lack of government action, leading to increased social initiatives and digital social entrepreneurship to improve stakeholder satisfaction (Ibáñez et al., 2022). If we connect these findings, we can easily sense that COVID-19 increased the level of digital transformation, and digitalization positively affected the performance of social enterprises (see Fig. 4).

The pandemic also raised social value co-creation, such as seed plant initiatives and reducing homelessness: Governments, social enterprises, and homeless people have come together to create new benefits that address the pandemic's negative impacts in which the value co-creation processes have been catalyzed, and as a result, increased focus on social entrepreneurship (Ratten, 2022). We can conclude that the pandemic caused the value co-creation process in the context of social entrepreneurship (see Fig. 4).

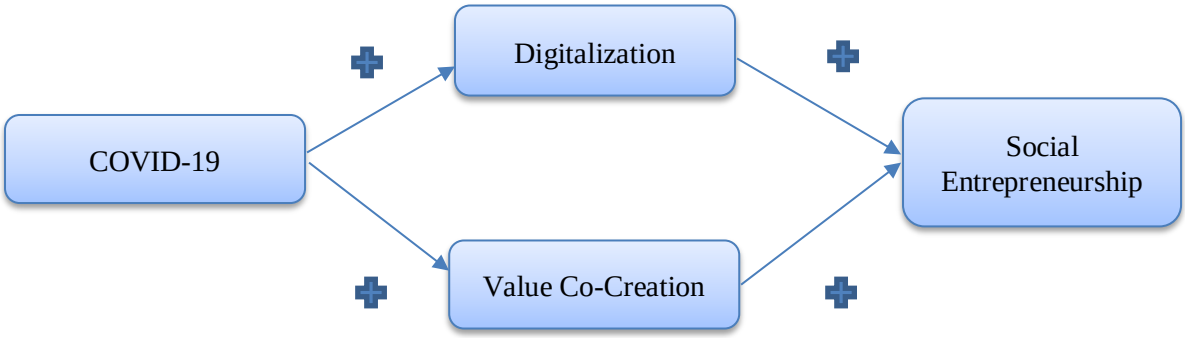

Fig. 4. Framework depicting Positive Relationship between COVID-19, Digitalization, Value Co-Creation and Social Entrepreneurship.

Digital financing favors the people for solving social problems (Martín, 2020; Chandna, 2022), and reduces transaction costs (Aisaiti et al., 2019; Goyal et al., 2021). Digitalization can increase sustainability in social enterprises (de Bernardi et al., 2019). Big data enabling has a positive relationship with employee performance in social enterprises (Wan & Liu, 2021). Digitalization improves geographical accessibility, lowers expenses, and, finally, makes healthcare services inclusive (Srivastava & Shainesh, 2015). We can conclude that digitalization decreases social entrepreneurial challenges and increase performance in the form of digital finance and crowdfunding (see Fig. 5).

Similarly, social enterprises can use value co-creation to create a better user experience (Lin et al., 2019). In this way, value co-creation affects social entrepreneurship positively to create a more inclusive, accessible and equitable society. Using digitalization can provide disadvantaged individuals with greater access and more power (Ibáñez et al., 2022). Through

digitalization and value co-creation, OurCityLove can bridge the gap in service (Lin et al., 2019).

Furthermore, the pandemic accelerated digital adoption in social entrepreneurship with entrepreneurs utilizing digitalization to enhance their impact during crises (Nakpodia et al., 2024). This shift fueled the rise of Digital Social Entrepreneurship, where social ventures integrated digital technologies into their business models to address societal challenges (Ibáñez et al., 2023). This trend highlights the adaptability of social entrepreneurs in using digital platforms to meet emerging needs and similarly, research shows that digitalization has helped social entrepreneurs navigate pandemic disruptions, empower organizational resilience, particularly in weak institutional settings (Nakpodia et al., 2024).

Digital platforms have also facilitated transformational entrepreneurship, enabling social enterprises to achieve economic and social goals, and as an illustration, "ClickforVic" digital platform in Australia connected rural farmers with people in the cities during lockdowns, showing how digitalization supported the processes (Ratten, 2023). Overall, the pandemic has reinforced the critical role of digitalization in social entrepreneurship, emphasizing the need to bridge the digital divide for inclusive innovation.

Similarly, the pandemic also triggered value co-creation processes in social enterprises. Value co-creation played crucial role in addressing urgent needs and collaboration through digital platforms helped tackle issues like food security, healthcare access and others (de Silva et al., 2022). The rapid adoption of digital tools has further enabled value co-creation and facilitated stakeholder engagement, information sharing, and collaborative problem-solving despite physical distancing (Polese et al., 2022). The pandemic has empowered value co-creation as a key strategy for social entrepreneurs and social entrepreneurship in overall.

Taking all these into consideration, we can state that both digitalization and value co-creation increased social entrepreneurship performance (see Fig. 5). Since The Friendly Restaurant app is empirical result of value co-creation research (Lin et al., 2019), we can also conclude that value co-creation process improved digitalization in context of social entrepreneurship and relationship between them is also positive. Simultaneously, digitalization has enabled social enterprises to create new value through co-creation. Even though app stems from a value co-creation study (Lin et al., 2019), without digitalization, co-creation process wouldn't happen.

Thus, by leveraging technology, social entrepreneurs can collaborate with stakeholders to create innovative products, services, and solutions.

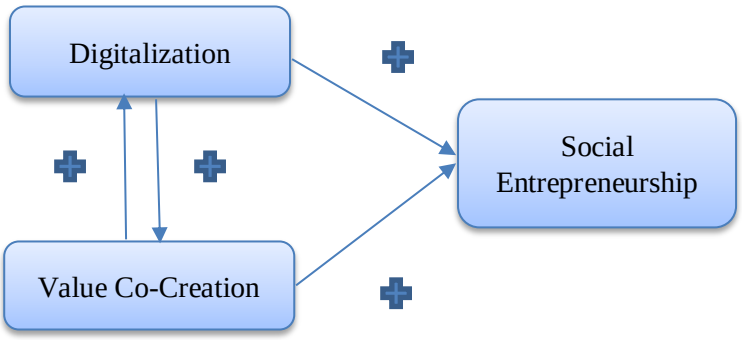

Fig. 5. Framework depicting Positive Relationship between Digitalization, Value Co-Creation and Social Entrepreneurship.

Additionally, digital tools can be used to facilitate access to support networks and a wide range of resources. By using digital tools to co-create value, social entrepreneurs can maximize the impact of efforts and create a more equitable and sustainable world. Taking all these into consideration, we can conclude that digitalization and value co-creation are mutually affecting each other in positive way (see Fig. 5). To summarize, digitalization empowers sustainability of social enterprises as well as addressing social problems (de Bernardi et al., 2019; Martin, 2020; Chadna, 2022), improves accessibility, lowers expenses and make services more inclusive for the community (Srivastava & Shainesh, 2015), and positively correlates with social entrepreneurial performance (Wan & Liu, 2021). As a result, digitalization mitigates social entrepreneurial problems and enhances social entrepreneurial performance (Figure 5).

Simultaneously, social enterprises can utilize value co-creation which plays a crucial role in social entrepreneurship by fostering inclusivity, accessibility, and equity to improve user experience (Lin et al., 2019). Digitalization further empowers disadvantaged individuals by increasing their access to services and resources (Ibanez et al., 2022). Since through combination of digitalization and value co-creation, organizations such as OurCityLove can bridge service gaps, ensuring greater equity in service provisions (Lin et al., 2019), it is evident that both digitalization and value co-creation contribute to improve social entrepreneurship (Figure 5). The Friendly Restaurant application, as an empirical outcome of value co-creation (Lin et al., 2019), demonstrates that value co-creation enhances digitalization within social entrepreneurship. The interrelationship between digitalization and value co-creation can be

thus symbiotic, with each driving and reinforcing the other.

Digitalization has not only enabled social enterprises to create new value through co-creation but also facilitated collaboration among stakeholders to develop innovative products, services, and solutions. Moreover, digital tools serve as catalyst for connecting social entrepreneurs with support networks and a diverse range of resources. By using digitalization and value co-creation to maximum advantage, social entrepreneurs can enlarge their impact, addressing complex societal challenges more efficiently. Empirical evidence from previous studies suggests that digital platforms facilitate knowledge exchange, innovation, and stakeholder engagement, all of which contribute to a more equitable and sustainable world. Thus, digitalization and value co-creation are not only interrelated but also mutually reinforcing, forming a dynamic ecosystem that enhances the social entrepreneurship (see Fig. 5).

• 2. 4 | Discussion of Findings in Study 1

In this part, we discuss research gaps, theoretical contributions, managerial relevance and practical implications, recommendations for future research and finally, limitations.

• 2. 4. 1 | Research Gaps and Theoretical Contributions

A comprehensive review of 61 academic articles was conducted to address key research question of "What underlying mechanisms tie digitalization, value co-creation and social entrepreneurship?" aiming to understand existing knowledge in academic field. To meet the first objective of consolidating existing research and conceptualizing digitalization and value co-creation in context of social entrepreneurship, a comprehensive research profile was created (Sec. 3.1 and 3.2). The second objective was to analyze thematic connections between different studies. This was done by exploring common themes across studies in section 3.3. The aim was to identify any remaining research gaps in order to progress subject's development. It attempted to establish and validate research agenda, examine evidence for particular research question,

synthesize existing evidence to provide comprehensive understanding of topic, and finally craft recommendations for action based on review findings.

It appears that research development is leading to a new field of study focused on use of digitalization and value co-creation to assist social entrepreneurship. We can expect to see increasing number of studies on this topic in future. However, our research has identified that articles connecting 3 streams of literature is lacking. Our main research aim was to identify gaps in literature and connect 3 streams, and with this, we tried to contribute to literature. The first research gap is connection between social entrepreneurship, digitalization and value co-creation. Our research has identified themes connecting three streams of literature that need improvement.

Secondly, there is a deficiency in COVID-19 focus on articles about both digitalization and value co-creation in context of social entrepreneurship. Even though there are separate studies focusing on digitalization and social entrepreneurship in COVID-19 as well as value co-creation and social entrepreneurship in post-COVID-19 period, we think it's vital to investigate all 3 streams of literature together. Research found that literature on correlation between digitalization and value co-creation for social enterprises is scarce and disjointed. Literature on COVID-19 has largely failed in its purpose of synthesizing and providing guidance to businesses and regulators on how to implement programs related to social entrepreneurship, value co-creation, and digitalization in post-COVID-19 period, which is surprising given the vast number of papers on these topics.

This study contributes to current literature by suggesting two theoretical frameworks based on the gaps in the literature and suggesting a research agenda for future research. Framework depicting Positive Relationship between COVID-19, Digitalization, Value Co-Creation and Social Entrepreneurship (see Fig. 4) is one of theoretical contributions of this article. The relationship among these variables wasn't explicitly investigated before. The theoretical contribution of this academic research is the contribution that the research makes to the current body of knowledge on the literature streams of digitalization, value co-creation and social entrepreneurship. Additionally, also involving COVID-19 impact, this research adds to the overall understanding of the topic and tries to help gain a new perspective after the pandemic in terms of the existing literature and theory.

The Framework depicting Positive Relationship between Value Co-Creation, Digitalization and Social Entrepreneurship (see Fig. 5) is the second theoretical contribution of this article. In this regard, this article helps to reveal a direct relationship between digitalization, value co-creation and social entrepreneurship and tries to resolve the inconsistencies in the literature. The main purpose these theoretical frameworks serve is that these suggestions need for further empirical testing.

To summarize, our objective was to explore interconnections between three concepts, and to achieve this, we conducted systematic literature review. Because despite a growing body of literature on them, our research revealed a significant gap: there is a lack of studies that simultaneously address all three topics. While each of these themes has been explored independently, the intersection of these streams has not been sufficiently investigated. This is relevant because the integration of three elements can lead to transformative insights for both theory and practice in social entrepreneurship. Study 1 directly addressed this gap by linking three streams, creating a foundation for future research that explores how these elements each other. In addition to the general lack of integration, we identified a more specific research gap regarding the role of the pandemic in shaping these dynamics. While some studies have focused on digitalization in social entrepreneurship during the pandemic, and others have examined value co-creation in the post-COVID period, there was a clear lack of research that connects the four concepts. The pandemic has significantly accelerated digitalization and reshaped value co-creation in social entrepreneurship, yet the literature has largely failed to synthesize these changes and offer actionable guidance for social entrepreneurs, policymakers, and researchers. This oversight is surprising given the global impact of COVID-19, which fundamentally altered the way social enterprises operate, create value, and utilize digital tools.

To address these gaps, we contributed two frameworks that bind digitalization, value co-creation, and social entrepreneurship together, particularly in the context of the pandemic. The first framework proposed a positive relationship between the four concepts (see Fig. 4). This framework shed light on how these variables have interacted during the pandemic. Emphasizing the role of digital tools in enabling value co-creation in social enterprises, because previous research has not explicitly examined this relationship, and our framework provided a novel perspective on how these factors converged to shape the future of social entrepreneurship. The second contribution was a framework (Figure 5) addressed inconsistencies in the literature, where digitalization and VCC have often been treated as

separate entities within the context of social entrepreneurship. We argued that these elements are inherently interconnected and provided a conceptual model that linked them directly, aiming to resolve existing contradictions in the literature and laying groundwork for empirical research that can validate these relationships.

The theoretical contributions of this study were crucial in advancing the academic understanding of how digitalization, value co-creation, and social entrepreneurship are interrelated, especially in a post-pandemic world. Our frameworks were not just theoretical; they also provided a platform for future empirical testing. By offering a clearer picture of how these variables influence one another, they help direct future research towards more integrated studies that further refine and validate these connections. Ultimately, we hope that this research will inspire further studies that explore these relationships in greater depth and contribute to both theoretical and practical advancement of the field.

- **2. 4. 2 | Research Agenda, Recommendations for Future Research**

The current state of research on social entrepreneurship does not provide results that are applicable to different contexts and does not adequately consider the relationship between digitalization, value co-creation and social entrepreneurship. To address this misalignment between theory and practice, a research agenda is needed that focuses on the topics mentioned in this section.

A further suggestion for research into the relationship between digitalization, value co-creation and social entrepreneurship includes studying the topic from the perspective of other mainstream marketing and business themes, such as innovation, sustainability and financial security.

By making thematic choices through clear and wide research questions, the importance of the topic for the pure management subject will be acknowledged. The following research questions in Table 3 can be mentioned for future research:

Table 3. Future Research Questions

Main topics	Possible Research Questions
Digitalization and Social Entrepreneurship	What are the opportunities and risks of digitalization for social entrepreneurship? How does digitalization affect the ability of social entrepreneurs to access resources? What are the advantages and drawbacks of digitalization for social entrepreneurship?
Value Co-creation and Social Entrepreneurship	How can value co-creation support the financial goals of social entrepreneurs? How can organizations use value co-creation to drive innovation?
Digitalization, Value Co-Creation and Social Entrepreneurship	How does digitalization facilitate the collaboration of stakeholders in social enterprises? How does digitalization enable value co-creation for social entrepreneurship? How can digitalization and value co-creation be used to address sustainability issues in social entrepreneurship? How can digitalization and value co-creation be deployed to improve social entrepreneurship? What role does value co-creation play in digitalization of social enterprises?

This study has provided a clear research agenda for marketing, business and management scholars to identify potential gaps and avenues for further research. Two gaps have been identified, which concern the connection of 3 streams and COVID-19 focus. Furthermore, examples of relevant research questions and thematic fields have been proposed. Future research should aim to address these gaps and explore the potential of the suggested research questions and thematic fields. This would enable scholars to gain a deeper understanding of the field and develop effective strategies for managing marketing, business and management operations.

- **2. 4. 3 | Limitations of the Research**

This study presents some limitations, which need to be addressed in further research. The choices made in a systematic literature review can be disputed, as the sample is highly dependent on the search keywords and the applied restrictions. Quality criteria may further exclude important studies, and the sample is naturally limited to the offer available, as papers were selected from two different databases. Additionally, the guiding research question could be explored in a different way, such as multiple case studies with in-depth face-to-face interviews with social entrepreneurs, which could provide further insight into the relationship between digitalization, value co-creation and social entrepreneurship. To ensure a comprehensive review of this topic, it is essential to consider the limitations of this research and address them in future studies.

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3. Study 2: Multiple Case Studies

"Digital Social Entities, Valuable Communities: How Digitalization enables Value Co-creation"

Enterprises prioritizing social issues over profit maximization can lead to value co-creation, especially in marginalized and unprivileged communities. In this regard, this study explores underlying theoretical mechanisms that tie digitalization and value co-creation together for social entrepreneurship's development. The article aims to identify how digitalization enables value co-creation for social enterprises. We conduct multiple case studies, have 11 in-depth face-to-face interviews with social entrepreneurs from Azerbaijan and synthesize the findings from primary and secondary data. As a result, we reveal that digitalization enables value co-creation for social entrepreneurship through the new phenomenon, which we call Data-driven Social Co-creation (DSC), and its subcategories such as Efficiency, Resource Mobilization, Feedback Loops and Data Utilization. Finally, we recommend DSC framework which shows the relationship between digitalization and value co-creation in social entrepreneurship, and which is the main theoretical contribution to the social entrepreneurship literature. Additionally, we provide a research agenda on the respective research field.

- **3. 1 | Introduction of Study 2**

Social entrepreneurship represents a business venture oriented toward benefiting society rather than solely maximizing the individual benefits (Roberts and Woods, 2005). Social enterprises involve identifying methods to create innovations, make use of resources, and tackle social needs to generate value (Wu et al., 2020). The primary objective of social enterprises is to bring about positive societal change (Dacin et al., 2010).

Meanwhile, digitalization, which is defined as increased use of digital technology by an organization, industry or country, is radically changing the way businesses operate (Brennen & Kreiss, 2016). Despite digitalization's significant impact on entrepreneurship, there can be negative consequences in social aspects and overall, there is limited information available on its outcomes (Elia et al., 2020). However, digitalization also

provides great opportunities for social enterprises, and one of these opportunities is collaboration with customers, which gives rise to co-create value (Lin et al., 2019), allowing them to jointly shape the product or service experience to align with their needs (Prahalad & Ramaswamy, 2004).

There is typically a collaborative relationship among social entrepreneurship, digitalization and value co-creation, enhancing the positive influence of each: Digitalization simplifies communication, facilitating social entrepreneurs in co-creating value with different stakeholders; Interconnection possesses the potential for bringing social change; Technologies assist social entrepreneurs in creating novel solutions and adapting to evolving needs (Goyal et al., 2021; Aisaiti, et al., 2021; Loukopoulos & Papadimitriou, 2022; Chandna, 2022).

So, social entrepreneurship is positively affected by digitalization and, likewise, by value co-creation: Digitalization increases sustainability (de Bernardi et al., 2019) and employee performance within social entrepreneurship (Wan & Liu, 2021) while decreasing expenditures (Aisaiti et al., 2019; Goyal et al., 2021). Digitalization also contributes to accessibility and inclusivity in services (Srivastava & Shainesh, 2015). Similarly, social entrepreneurship also involves value co-creation to foster a more inclusive, accessible and equitable society (Ibáñez et al., 2022). Overall, value co-creation is leading to increased emphasis on social enterprises (Ratten, 2022).

Although there are several separate research both on the social enterprises' digitalization and the value co-creation, yet there is limited research investigating exactly digitalization's effect on value co-creation, and it is only in the context of traditional manufacturing companies (Lenka et al., 2017). Additionally, from the practical side, social entrepreneurs can think that the industry isn't exploiting digitalization for value co-creation enough and may increase their usage of technologies to generate value, but many still lack a comprehensive understanding of digitalization for value co-creation. Thus, further research is necessary to better understand the effects of digitalization and its correlation with value co-creation from a new perspective with different social approaches and in the context of social entrepreneurship. *Therefore, we have an objective of connecting digitalization and value co-creation together for social entrepreneurship's development. By taking this research objective into consideration, we attempt to answer the following research*

question: How does digitalization enable value co-creation for social entrepreneurship?

Applied methodology is a multiple case study. Thus, the process had the phases of conducting the interviews, transcribing, translating and editing them, and finally, qualitative analysis of them via NVivo software. To address the research problem, this study builds on qualitative data from 11 interviews to conceptualize four underlying components of digitalization enablers for value co-creation, namely, Efficiency, Resource Mobilization, Feedback Loops, and Data Utilization. After revealing these four enablers, we came up with the new phenomenon of Data-driven Social Co-creation. This research identifies and explains how digitalization enables value co-creation in the social entrepreneurship context through different underlying mechanisms and contributes to the social entrepreneurship literature. Finally, we provide theoretical contributions, recommend a framework and research agenda on digitalization and value co-creation for social entrepreneurship.

- **3. 2 | Literature Review for Study 2: Digitalization, VCC and SE**

There is a lot of research on social entrepreneurship, start-up learning processes and entrepreneurship education; however, they mainly focus on the correlation between entrepreneurship and knowledge management (Jáki & Huszák, 2023). It is natural that from the standpoint of organizational learning, management students can gain valuable insights from technology start-ups on how to incorporate an entrepreneurial mentality into their management curriculum (Beke et al., 2023). Other than management students, there is also research on founders of start-ups as a distinct category of entrepreneurs (Virágh et al., 2024). Entrepreneurship's new and distinct category - Social Entrepreneurship can also be interpreted from different aspects, including prohibition of profit sharing and democratic operations: for example, Muhammad Yunus - founder of Grameen Bank, which gave microcredits to unprivileged and marginalized communities, had their operations on the basis of democratic principles and profit sharing, so that the social entrepreneurial activities of the women would be more successful (Yunus, 1999). All in all, even though there is much research on traditional entrepreneurship, academic studies with social enterprise founders are scarce, especially the ones investigating digital transformation and value co-creation.

Digitalization, social media and web-based tools that let entrepreneurs and consumers communicate by sharing, exchanging information and generating value, have completely changed the way people connect (Frau et al., 2023). Digitalization mitigates societal challenges (Zahra, 2021) and increases sustainability (de Bernardi et al., 2019) and collaborations in social entrepreneurship (Loukopoulos & Papadimitriou, 2022). Digital financing also emerges as a facilitator for individuals addressing societal issues (Martín, 2020; Chandna, 2022), while simultaneously diminishing expenditures (Aisaiti et al., 2019; Goyal et al., 2021). In countries with low levels of digitalization, the absence of social enterprises is likely to contribute to diminished national well-being (Torres and Augusto, 2020). Digitalization, especially the utilization of big data exhibits a positive correlation with employee performance within social entrepreneurship (Wan & Liu, 2021). Digitalization also contributes to improved geographical accessibility, cost reduction, and ultimately fosters inclusivity in healthcare services (Srivastava & Shainesh, 2015).

Social enterprises also leverage the value co-creation to contribute fostering more inclusive, accessible and equitable society (Ibáñez et al., 2022). Through the combined efforts of digitalization and value co-creation, OurCityLove social enterprise and its digital application plays a pivotal role in bridging service gaps (Lin et al., 2019). Instances of value co-creation also increased during pandemic: collaborative endeavors involving government, social enterprises and unprivileged communities have emerged and value co-creation have been catalyzed, leading to heightened emphasis on social entrepreneurship (Ratten, 2022).

In practice, there is typically a collaborative relationship among digitalization, value co-creation and social entrepreneurship, enhancing the positive influence of each: Digitalization simplifies communication, facilitating social entrepreneurs in co-creating value with different stakeholders; Interconnection possesses the potential for bringing social change; Technologies assist social entrepreneurs in creating novel solutions and adapting to evolving needs (Loukopoulos and Papadimitriou, 2022; Chandna, 2022; Mursalzade et al., 2023). Furthermore, all three concepts are in close harmony with the Sustainable Development Goals outlined by the United Nations: The progress towards attaining the SDGs can be hastened through digital transformation, facilitating social development, and social entrepreneurship involving innovative sustainable business models strives to generate positive social and ecological changes (Lin et al., 2019; Ratten, 2022; Mursalzade et al., 2023).

Even though there is separate research on social enterprises' digitalization and value co-creation, yet there is scarce empirical research exactly investigating digitalization's effect on value co-creation in social entrepreneurship. Consequently, further research is necessary to better understand the effects of digital transformation and its correlation with value co-creation in social businesses. Due to the gap between the mentioned three research streamlines, we attempt to explore mechanisms connecting digitalization and value co-creation for improvement of social entrepreneurship and explain how digitalization enables value co-creation in social enterprises.

- **3. 3 | Methodology: Research Design, Data Collection and Data Analysis**

This exploratory study used a multiple-case study research design to verify emergent findings and achieve larger generalization during theory building: So, cases inspected for hypothetical reasons, like disclosure of a strange peculiarity, replication of discoveries from different cases, opposite replication, elimination of alternative assumptions and elaboration of the developing hypothesis (Eisenhardt & Graebner, 2007). We use multiple case study research to investigate the research question (Yin, 2009). The chosen method allows for a comprehensive analysis of intricate social phenomena and for greater generalizability of any findings that emerge, as it allows replication of discoveries in more cases, and this, in turn, can aid the development of theories (Eisenhardt and Graebner, 2007).

3. 3. 1 | Case selection

Our research draws its conclusions from social and ecological enterprises since focusing on social entrepreneurship is an essential step in addressing the difficulties that society is currently facing. We employed a theoretical sampling strategy to select cases which would likely contribute to the further development of the existing theory (Eisenhardt and Graebner, 2007). For our study, we selected cases that exhibited certain pre-defined characteristics to avoid any selection bias. To be included in the study, the firms needed to 1) handle social or ecological problems, so they should be social or ecological enterprises and 2) provide access to key informants such as founders, co-founders, or chief managers of the firms. Additionally, we identified what kind of problem the enterprises are solving and who their targeted audience is.

This approach allowed us to develop a more comprehensive and accurate theoretical framework and reduced the potential for bias in our selection process (Eisenhardt and Graebner, 2007; Yin, 2009).

We have chosen Azerbaijan as the main data collection area, and there were three main reasons for this: Azerbaijan is a transitioned country from a socialist to a capitalist regime, with its oil-rich developing economy (Aliyev et al., 2016). By taking oil-economy's impact on social and ecological enterprises, this article focused on the cases from Azerbaijan. Secondly, several research shows that social entrepreneurship thrives in countries with developing economies and relatively lower welfare levels (Urban and Kujinga, 2017; De Beule et al., 2020; Torres and Augusto, 2020). The third reason was the practicality and easiness of data collection under the specific time frame. Simultaneously, the fact that findings are primarily based on Azerbaijan can be indeed a limitation and future research direction.

Additionally, we can also highlight the influence of Azerbaijani cultural context on adoption and effectiveness of digitalization in social enterprises, since cultural factors often play a crucial role in technology adoption and could provide valuable insights into why certain digital strategies succeed or fail in specific environments. Even though there are nearly 100 social enterprises in Azerbaijan, we had the pool of 29 social entrepreneurs that we could have face-to-face in-depth interviews with. Selection criteria of these 29 social entrepreneurs out of almost 100 social enterprises was that the respondents have to be English speaking, their social enterprise having online presence since we were investigating the phenomenon of digital transformation, and at the same time, their social entities have to be involving clients and community, since we also were researching the value co-creation phenomenon in the context of social entrepreneurship. Out of 29 social entrepreneurs in our list, we finally conducted 11 in-depth interviews. We concluded our research after studying these cases, as theoretical saturation has been achieved (Saunders et al., 2018).

Theoretical saturation is a key concept in qualitative research, particularly in grounded theory and other inductive methodologies, referring to the point at which no new themes, concepts, or insights emerge from data collection and analysis, meaning that further data collection would likely yield redundant information (Glaser & Strauss, 1967). It ensures that the study has captured a comprehensive understanding of the phenomena under research, decreasing the risk of leaving out important aspects; it enhances research rigor: by reaching saturation, researchers

demonstrate that they have collected enough data to support well-grounded conclusions, improving the validity and credibility of findings; it prevents unnecessary data collection: continuing data collection beyond saturation is often inefficient and does not add meaningful insights; this saves time and resources while maintaining methodological soundness (Guest, Bunce, & Johnson, 2006). Theoretical saturation also supports the theory development by ensuring that emerging theories are well-developed, internally consistent, and robust enough to explain the studied phenomena (Charmaz, 2006).

3. 3. 2 | Data collection

To reduce the amount of inaccurate information, it is important to avoid retrospective sense-making, and that is why we merged information from various sources (Eisenhardt and Graebner, 2007; Miles and Huberman, 1994). We conducted interviews with knowledgeable individuals who were willing to share their insights on the topic of interest due to their willingness to talk about it (Kumar et al., 1993). In detail, 11 out of 29 social entrepreneurs operating in Azerbaijan agreed to take part in our research and participated in the face-to-face in-depth interview stage. An interview protocol with semi-structured questions was used to explore how social enterprises leverage digital technologies and engage in value co-creation to achieve development and sustainability. The interview set was online on Microsoft Teams platform, due to the easiness of recording both video and audio content. Interviews were recorded in July-November 2023 and took approximately 1 hour on average. After transcribing the interviews, if necessary, we sent the transcribed interviews to the informants for clarification, whether grammatically edited versions were showing what they implied during an hour interview. 10 out of 11 interviews were in English, while one was translated from Azerbaijani language.

Table 1. Overview of the case studies. Source: Own compilation.

Profile of Social Enterprise	Solved Problem	Target Group	Primary data – Interview	Secondary Data – Post Description
Comics Studio	Environmental Awareness, Social Inclusion	Youngsters, Young Adults	54 minutes	Owned Social Media page
Vegan Sweets	Unemployment, Social Inclusion	Women with Disabilities	74 minutes	Owned Social Media page
Handcrafts; Comics	Environmental Awareness, Social Inclusion	Artists, Tourists; Youngsters, Young Adults	31 minutes	Owned Social Media page
Adaptive Clothes; Accessibility Maps	Clothing, Data-driven Technology	People with mobility impairment	29 minutes	Owned Social Media page
Rubik's Cube Competitions	Education, Social Inclusion	Youngsters, Young Adults	36 minutes	Owned Social Media page
Cashback Donations, Support Packages	Support for Charity Events	Social Fundraisers, Companies	47 minutes	Owned Social Media page, Website
Eco-friendly Reed Bags and Traditional Carpets	Unemployment, Cultural Preservation, Environment	Rural Women, Ethnic Minorities	70 minutes	Owned Social Media page
Comics Studio	Environmental Awareness, Social Inclusion	Youngsters, Young Adults	42 minutes	Owned Social Media page
Traditional Socks	Unemployment, Cultural Preservation	Rural Women, Ethnic Minorities	44 minutes	Owned Social Media page, Website
Digital Support Platform	Education and Finance	Social event and Enterprises	49 minutes	Owned Social Media page, Website
Eco-friendly Reed Bags and Traditional Carpets	Unemployment, Cultural Preservation, Environment	Rural Women, Ethnic Minorities	63 minutes	Owned Social Media page

3. 3. 3 | Data analysis

Using a theory-building approach, we created summaries of individual cases using primary data as the foundation. We used NVivo 10 software to analyze data through 4 coding steps, progressing from specific to general codes (Cabiddu et al., 2018; Saldana, 2015). We employed both inductive and deductive methods to study the available data. Initially, we took a deductive approach and used existing literature to interpret and analyze the qualitative data related to digitalization, value co-creation and social entrepreneurship. As an illustration, Easiness, Functionality, and Crowdfunding codes were used both in the literature and by our informants. Secondly, we used an inductive approach to analyze the data and identify common themes,

from which we developed new theoretical concepts (Kennedy and Thornberg, 2018). For example, with the inductive approach, we came up with the codes of Crowdsourcing, Trust and Privacy, Feedback, and Data Analytics. We tried to identify several patterns that reflect the key ideas present in our dataset.

We created detailed scheme from in-depth interviews, by coding every relevant quote or keyword. In light of our research question, subsequent analysis emerged from coding this data. Based on the quotes, insights and key results from 11 interview transcripts, we had subsequent analysis (Fig. 1).

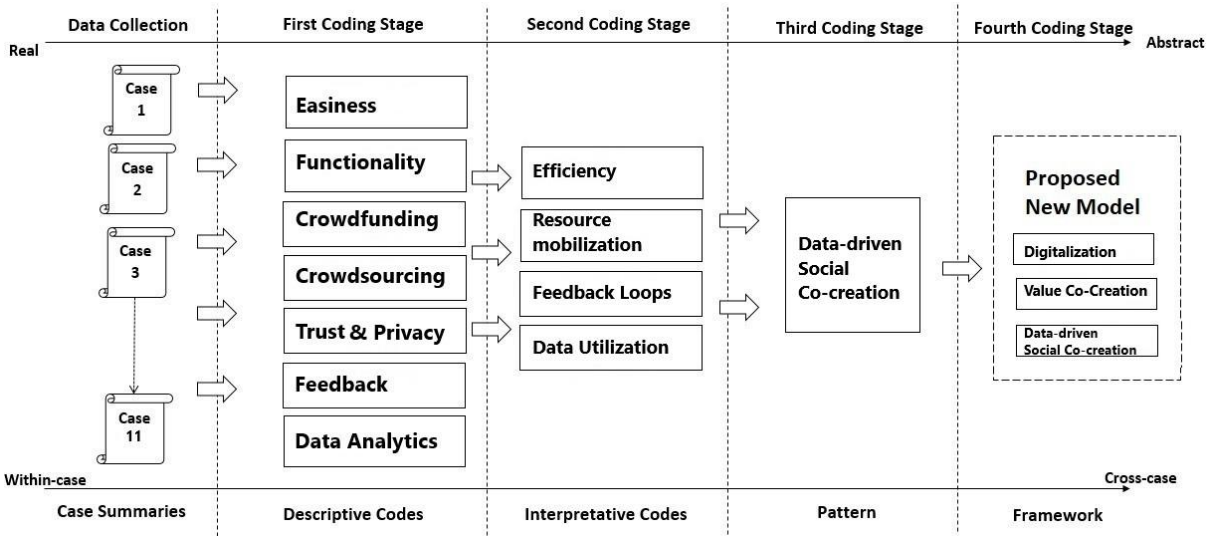

Fig. 1. Data analysis process for Multiple case studies in Social Entrepreneurship. Adapted from Saldana (2015) and Frau et al. (2022).

In the Detailed Coding Process, we summarize multiple cases and in-depth face-to-face interviews which present keywords and codes which are necessary for the qualitative analysis. After qualitatively analyzing summaries of interview transcripts, the first coding stage shows generic and real findings regarding the connection between social entrepreneurship, digital transformation, and value co-creation. At the first coding stage, some of the mostly stated keywords are the basis of descriptive codes (Easiness, Functionality, Crowdfunding, Crowdsourcing, Trust & Privacy, Feedback, Data Analytics).

Since there is a gap between the three streamlines of literature, the next coding stages try to synthesize available knowledge and generic keywords and codes into more abstract and

summarizing codes. For example, at the second coding stage, they make up new interpretative codes such as Efficiency, Resource Mobilization, Feedback Loops and Data Utilization (Fig. 1). Previous codes of Easiness and Functionality can be combined under the theoretical code of **Efficiency**. This theoretical code represents how digital tools and platforms aim to streamline processes and make operations more efficient both for social enterprises, their customers and collaborators in the value co-creation processes. Previous codes of Crowdfunding and Crowdsourcing can be linked under the code of **Resource Mobilization**. These raw codes reflect the ways in which social entrepreneurs leverage collective resources and contributions from the crowd to support their initiatives, which aligns with the broader concept of resource mobilization in social enterprises. Feedback, Trust and Privacy raw codes can be associated with **Feedback Loops**. Trust and privacy concerns often influence the feedback mechanisms within digital platforms. Feedback Loops involve the continuous exchange of feedback between users and the platform, which can help to build trust, and address privacy concerns through open communication and responsiveness. Data Analytics naturally fits in with **Data Utilization**. Data Analytics involves the collection, analysis, and interpretation of data to extract meaningful insights and inform decision-making as well as value co-creation processes. Data utilization encompasses a broader concept of how organizations effectively use data to drive innovation, inform strategies, and optimize performance. By connecting these raw codes with more theoretical ones, we can develop a deeper understanding of underlying mechanisms and dynamics within the context of social entrepreneurship. This enables researchers to explore and analyze these concepts in a more comprehensive manner, contributing to advancement of theoretical frameworks and practical applications in the field.

Lastly, four theoretical codes of Efficiency, Resource Mobilization, Feedback Loops and Data Utilization tailored new code of Data-driven Social Co-creation at the third coding stage and contributed to the final proposed conceptual model at the fourth coding stage.

- **3. 4 | Findings of Study 2: DSC Framework**

3. 4. 1 | Detailed Coding Process

Firstly, digitalization's advantages such as its easiness, functionality, saving time and financial costs are combined under one code of **Efficiency**. Efficiency or Digital Efficiency in this context, can be defined as optimization of digital processes, technologies, and systems in achieving desired results with minimal resources and waste. Efficiency is commonly defined as the ability to achieve a desired outcome with minimal waste of resources, such as time, energy, or materials, and it is often expressed as the ratio of useful output to total input in a given process: According to Samuelson and Nordhaus (2010), "Efficiency in economics refers to the optimal allocation of resources in such a way that no further reallocation can make one individual better off without making another worse off" (p. 29). According to our data analysis, digitalization's impact on value co-creation in social entrepreneurship by contributing to the overall product quality, saving time and costs. Other than easiness and high speed of the work process, digital efficiency is reflected in finance-related activities such as easy sales, easy money transfer and easy means of purchasing as stated by the co-founder of a social enterprise selling comics (Case 1, Table 2). Functionality under the Efficiency code is also worth mentioning, according to our data analysis. We revealed that digitalization brings functionality, "snowball effect" – fast growth (Case 8) and better targeting as stated by founder of enterprise selling socks made by rural women (Case 9).

Secondly, crowdfunding, crowdsourcing, and their integral base – trust and privacy combined under the code of **Resource Mobilization**. Resource Mobilization can be defined as the process of acquiring and gathering necessary assets, including financial, human and material resources, to support and implement a particular project, initiative or enterprise. We revealed that crowdfunding was another keyword used by the interviewees. One informant from an enterprise selling handcraft products, talks about digitalization and value co-creation for crowdfunding, easy money transfer and financial transparency (Case 3, Table 2). We have found that trust and privacy are crucial parts of digital payments as well as crowdfunding and social fundraising (Case 6, Table 2). When it comes to crowdsourcing, the founder of social enterprises selling adaptive clothes, fashion shows for disabled people and digital accessibility maps, states that crowdsourcing allows users to submit the data, create new value with submitted information with them as social enterprise or civil society and then with the

government itself (Case 4, Table 2). Informants from the support platform, handcrafts and comics studios, also talk about crowdsourcing mainly when it's been asked about value co-creation (Case 10, 3, 1). The founder of the digital support platform mentions it for widening the resources, to have platform to share other resources than financial resources, including venue support, expertise support, networking (Case 10, Table 2).

Thirdly, feedback-related themes such as the feedback-based product and service development are gathered under the code of **Feedback Loops**. Feedback Loops can be defined as utilization of digital platforms for gathering continuous feedback from stakeholders, by incorporating it with product development, service improvement, and decision-making. According to our analysis, we revealed the importance of digitalization for value co-creation in social enterprises by *"cooperating with focus groups for feedback and needs assessment"* as it has been stated by the co-founder of comics studio (Case 8). We found feedback-based product or service development as a common practice in many social enterprises. For example, an entrepreneur selling vegan sweets, previously didn't have minimalistic and vegan products, but then had to include these on the menu (Case 2, Table 2). Informant from enterprise serving youngsters from unprivileged backgrounds, mentions gathering feedback for customer expectations and value co-creation. He states the importance of open communication, needs assessment with focus groups. *"Well, our competitions are mainly based on the value co-creation."* Because in the service that they provide, clients are a crucial part of the service, they are also serving and creating value together. In this regard, feedback is essential. Knowledge management at the managerial level, collaboration of managers and collaboration with customers are also related things and mentioned by him for feedback and addressing client needs (Case 5). Active listening, electronic word of mouth, quality assurance, feedback from focus groups and keeping up with the clients' expectations have also been mentioned a lot by respondents and gathered under the Feedback Loops code.

Fourthly, digitalization's components such as tech adoption, digital skills and data analytics are combined under one code of **Data Utilization**. It can be defined as the process of extracting and using meaningful insights, knowledge, or value from data through analysis, interpretation, and application. According to our qualitative analysis, we have observed that lack of data collection in social enterprises, especially in the first years is common, however, they must satisfy their clients with unique extra valuable products, because as one respondent mentions *"after all, sales are not only sales, but a huge part of building trustable long-term relationship*"

(Case 2). With this, the importance of data analytics, online surveys and data utilization in general was revealed once again. Data analytics and insights side of digitalization for value co-creation also have been mentioned by co-founder social entrepreneur of comics studio (Case 3, Table 2). Lastly, the statistics part of data analytics also has been mentioned by founder of social enterprise using data-driven map technologies (Case 4, Table 2). It was repeated in Feedback Loops since they are similar and related concepts.

3. 4. 2 | Proposed Conceptual Framework

Firstly, Efficiency often involves optimizing resource allocation and utilization to achieve maximum output. However, resource mobilization focuses on gathering and leveraging resources effectively to support organizational goals. In context of social entrepreneurship, these two concepts can be intertwined to emphasize the importance of efficiently mobilizing resources, including human, financial and technological resources, to empower operational effectiveness and efficiency.

Secondly, Feedback Loops involve the continuous exchange of information and feedback between stakeholders, allowing social enterprises to gather insights, assess performance, and adapt strategies accordingly. Data Utilization entails the collection, analysis, and interpretation of data to inform decision-making, drive innovation and value co-creation. These two concepts intersect in the context of leveraging feedback data to inform data-driven decision-making processes, enabling organizations to refine their strategies, products or services based on real-time insights and feedback from stakeholders.

Table 2. Summary of Identified Concepts. Source: Own compilation.

Concept	Definition	Illustrative Quotes
Efficiency	Optimization of digital technologies in achieving wanted results with minimum resources and waste	*"Overall management of the business is easier because of digital means of purchasing. One can pay digitally through Google pays, PayPal. These make it so easier to collaborate with customers."* Co-founder, Case 1. "L*ess time and energy are going*". Founder, Case 2. *"We can deliver our products to the regions, and also to abroad".* Co-founder, Case 3. *"It makes easier for us to announce, clients to register to competitions, easier for promoting our events and accessing a wide audience. It saves time, we group competitors in a second, reach more audience, grow faster in a cost-effective way"*. Co-founder, case 5. *"Of course, you can do it in one day, be international organization. So, we can make cross-border donation. It helps us to involve more people. Operational expenses and risks with ... old fashioned cashback system is much higher than using application."* Founder, Case 6.

		"From perspective of digitalization, more people know what's happening in community. We are promoting awareness, selling online, you can do it easily. You fully commodify everything, commodify the sensitive issue. Our website used to be only informational in the first years and then they made it more functional for online sales." Co-founder, Case 11. *"With value co-creation and digitalization, companies can offer many new side products or services, there can be more growth, fast entry to market, faster import and production."* Founder, Case 10.
Resource Mobilization	Process of gathering needed financial, social and material resources, to sustain an enterprise	*"Digital crowdfunding platforms such as Patreon, Kickstarter or local Tokhum can allow us to raise funds and engage a community of backers who share our vision and actively contribute to our success."* Co-founder, Case 3. *"Because with crowdfunding, they're just believing you that it's good for testing your product and idea. It means they're contributing some amount of money. Since they believe, it'll be good idea and product."* Co-founder, Case 7. *"Simple, useful and good for all: anybody in the world can use, donate to one of social fundraising inside the application, or create his or her own social campaign… In our case, the privacy is very clear as here. Yeah, by sitting at home without going to ATM. So, this is a privacy and good service for users, for fundraisers. Also, it's easy. It's very convenient to create those campaigns in our system… So, if merchant is on site, he should use our app to recognize the client, it's very easy, you can recognize, identify the client by reading QR. If you're online, you can use our application and users use their own unique number, and if you are e-commerce, in that case there is no need for application, just from merchant side, from user side you have to use application: In that case, you go to our application, find proper merchant and make all shopping online, and referral system is working there, so, the system understands that by whom it was referred to."* Founder, Case 6. *"So, this is kind of a place, a bridge between the citizens, the governments and the authority. In that sense digital innovation are creating new values and bringing these two separate groups that wouldn't really come together to fix this problem. Basically, we don't come up with the designs on our own. We don't think by ourselves: What? Which kind of clothing we need to design? Rather, it is the models who are going to be wearing the clothing on the stage that get to explain their needs and show us what kind of clothing that they would be much better with. Then they get to work with them to design specifically that what they need. that's another track of creating value together with customers."* Founder, Case 4. *"I knew that it'd be online platform, otherwise it wouldn't work. So, digitalization is very special in our case. Also, crowdfunding is mainly from physical individuals and with new enterprise I wanted to bring corporative companies too, and have crowdsourcing other than crowdfunding to widen resources. If you are corporate, you are not using the office at the weekends and you can give your venue to social enterprises. Or another example is being trainer or mentor and sharing your expertise. Or if you are not expert, you can be volunteer. So, my point is that support is not only financial. And the reason why we started online was the ease of doing all these."* Founder, Case 10.
Feedback Loops	Utilization of digitalization for continuous feedback from stakeholders, by incorporating it with	*"So, based on this feedback from our customers, it also changed our stereotypes about product design. More feedback you get, you actually understand that of course you can have some trends in local market, but you can also change some perspectives about your products as well. So, digitalization's main unique point and value for us is an opportunity to get reactions from and interact with all possible stakeholders. Constant feedback is good for testing, experimenting, and continuously*

	product and service development	*adjusting to the needs of different stakeholders and satisfying their needs by accepting reality after testing with focus group or with the clients."* Founder, Case 2. *"Digitalization also provides statistical numbers or statistical feedback in numbers."* Co-founder, Case 8. *"Client satisfaction is very important, because we believe power of mouth-to-mouth marketing, and happiness of clients bringing more people. With feedback, they are shaping even our video content."* Co-founder, Case 11. *"Balance of keeping our roots, of making the traditional socks, but also taking people's own needs, orders. This is more sustainable to continue."* Founder, Case 9.
Data Utilization	Process of extracting meaningful insights and value from data through analysis, interpretation, and application	*"People need skills and knowledge to use technology to create something digitally and do the marketing because it is generally very competitive".* Co-founder, Case 1. *"How to actively use, promote, sell something… You know, it was hard for workers to promote, since rural regions have lower internet speed, tech adoption and elderly women in those regions have lower digital skills to commodify their products and culture online. It is to keep the competition in the digitalization, because we always have to keep on proving our digital skills. Nowadays many companies offer high tech and everything with the one click. So, it's also hard to be in the competition here."* Co-founder, Case 7. *"Leveraging data analytics tools, social entrepreneurs can analyze trends, measure impact, and make data-driven decisions to improve their initiatives' effectiveness."* Co-founder, Case 3. *"In this social enterprise we are collecting data for better and accessible buildings for people with disabilities."* Founder, Case 4.

Our main research question of how digitalization enables value co-creation for social entrepreneurship development can be answered with Data-driven Social Co-creation. Digital transformation enables value co-creation in social enterprises through Data-Driven Social Co-Creation. This new term can be defined as analyzing data to identify trends, preferences, and areas for improvement via continuous feedback and using data insights to co-create tailored solutions that address specific stakeholder needs in social entrepreneurship and contribute to the solution of social or ecological problems.

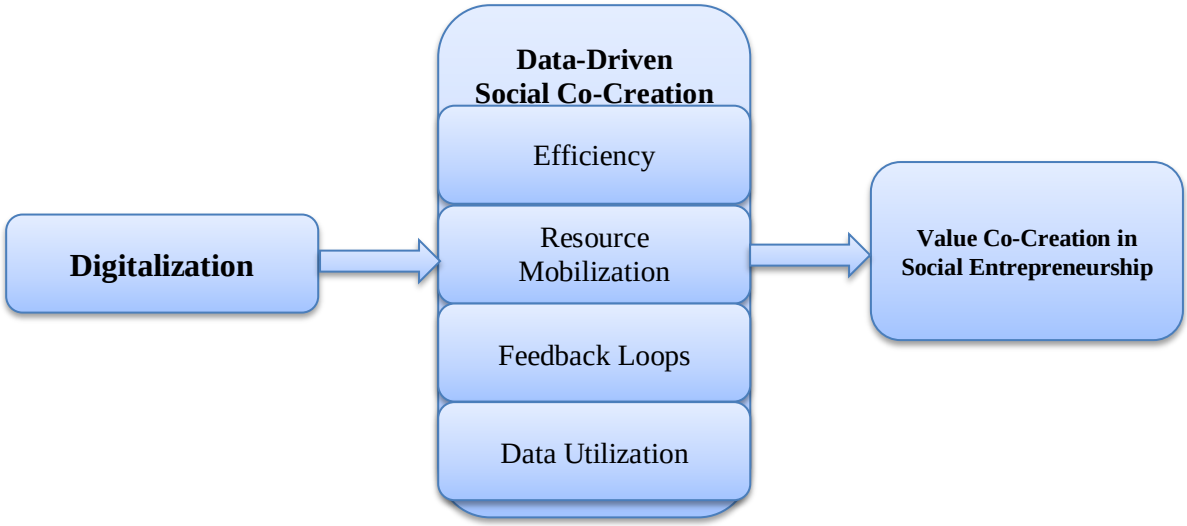

Fig. 2. DSC Framework depicting mechanisms connecting Digitalization and Value Co-Creation for Social Entrepreneurship's improvement. Source: Own Research.

As an illustrative quote, we can mention that everything starts from entrepreneurial intention, goal, and mindset. As the founder of social enterprise selling vegan sweets made by disabled women puts it: *"You know when you are having the right mindset for doing this work, nothing will stop you. You will not see some challenges in digitalization or value co-creation when you are accepting reality as it is. For example, the biggest organizations, United Nations, are using something else for sustainability of local communities. They don't ask opinions from local beneficiaries about their lifestyle, problems and real needs. They can use some digital tools, but it will not be effective. So, digitalization is great, but it should be tailored to any specific context and audience. When you are using digitalization for wrong audience, your resources will be wasted for nothing. So, that's why for sustainability and then based on the data we got from value creation process, from understanding the needs of our customers or beneficiaries, from understanding the local context - only in this case we can think about digitalization."*

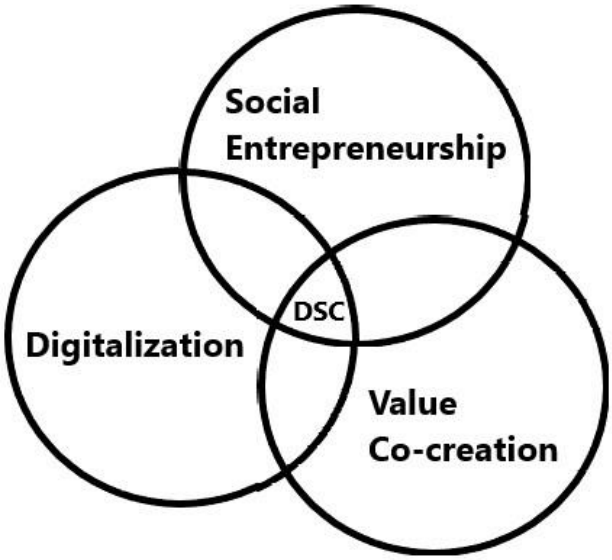

Fig. 3. Data-driven Social Co-creation as a gap-filler and connection between Digitalization, Social Entrepreneurship and Value Co-creation. Source: Own Research.

Therefore, by integrating the codes of Efficiency, Resource Mobilization, Feedback Loops and Data Utilization, we can develop new theoretical concept of Data-driven Social Co-creation, which brings digitalization, social entrepreneurship and value co-creation together, and emphasizes integration of data-driven decision-making processes with value co-creation initiatives in social entrepreneurship (Fig. 3). This concept underlines the importance of utilizing data and feedback to co-create value with stakeholders, ultimately enhancing social entrepreneurial performance and impact to solve social problems. We can also interpret Data-driven Social Co-creation as a bridge between digitalization.

- **3. 5 | Discussion of Findings in Study 2**

3. 5. 1 | Theoretical Contributions

To meet research objective and to explore underlying theoretical mechanisms that tie digitalization and value co-creation together for social entrepreneurship's improvement, multiple case study methodology is implemented (Sec. 3). Thus, comprehensive analysis of 11 face-to-face in-depth interviews is conducted to address key research question of "How does digitalization enable value co-creation for social entrepreneurship?" and detailed coding process is created (Sec. 4.1). This research extends previous studies in social entrepreneurship

literature by proposing the theoretical framework of Data-driven Social Co-creation (Fig. 2)

Social enterprises are impacted by digitalization (Aisaiti et al., 2019; Goyal et al., 2021; Wan & Liu, 2021), and value co-creation (Ibáñez et al., 2022; Ratten, 2022), yet digitalization's impact on value co-creation for social entrepreneurship is underexplored and practically, there is still need for social entrepreneurship to increase its use of digitalization to co-create value. Our research has identified themes enabling digitalization for value co-creation in social entrepreneurship: Efficiency, Resource Mobilization, Feedback Loops, Data Utilization, or in one word – new phenomenon of Data-driven Social Co-creation.

Furthermore, our research revealed that the relationship between digitalization, value co-creation and social enterprises is disjointed and very scarce in literature. Therefore, literature on social entrepreneurship has largely failed in its purpose of synthesizing and providing guidance to social entrepreneurs on the implementation of value co-creation, and digitalization, which is surprising due to the large amount of research work on these topics.

Our research adds up to the literature by eliminating the research gap, proposing a conceptual framework, and depicting the research agenda for future endeavors. DSC Framework showing mechanisms connecting Digital Transformation and Value Co-Creation for Social Entrepreneurship's improvement (Fig. 2) is a theoretical contribution of this article. The connection between digitalization and value co-creation for social entrepreneurship's development wasn't explicitly and empirically investigated before. DSC Framework resolves inconsistencies and contributes to existing knowledge base regarding digitalization, value co-creation and social entrepreneurship literature streams.

3. 5. 2 | Managerial Implications

Data-driven Social Co-creation – phenomenon where digitalization enables social entrepreneurs to leverage efficiency, resource mobilization, feedback loops and data utilization to efficiently, wisely and collaboratively create value with different interested parties, involves digital transformation to collect, analyze and interpret data from various sources, including customer feedback, market trends and social impact metrics. In Data-driven Social Co-creation, social enterprises harness their stakeholders' power, identify innovation opportunities, and tailor their services or products accordingly. By integrating data-driven insights into their co-creation processes, social entrepreneurs can empower relevance, effectiveness and

sustainability of their initiatives, ultimately driving positive social impact in their communities. This phenomenon highlights transformative potential of digitalization in social entrepreneurship, highlighting vitality of data-driven decision-making and collaboration in addressing complex social challenges. Through Data-driven Social Co-creation, social enterprises can unlock opportunities for innovation, partnership and positive change creating value extending far behind traditional business metrics.

Lastly, to enhance discussion on indicators to measure digitalization's impact, we created a table for assessing the outcomes of digital strategies in tangible terms to provide practitioners with clearer guidelines on evaluating their initiatives.

Table 3. Digital Strategy Assessment. Source: Own Compilation.

Assessment Criteria	**Guiding Questions**	**Indicators or Metrics**	**Data Sources**
Clarity of Social Entrepreneurial Goals	What's specific aim of the social enterprise's digital strategy?	Clearly Defined Business Goals	Stakeholder Interviews, Strategy Documents
Levels of Engagement and Motivation for Value Co-Creation	How engaged are customers and collaborators?	Participation Frequency, Users' Activity Rate	Surveys, Social Media Application's own Analytical Tools
Effectiveness of Collaboration	How efficiently are stakeholders contributing to VCC?	Quality Input, Number of Contributions and Joint Project over time	Feedback Forms, Platform Indicators, Collaboration Tools.
Measurement of the Impact	What's the tangible effect on unprivileged communities?	Social Impact Metrics, Number of Lives Improved	Testimonials of Community members, Impact Assessments
Learning Outcomes	What new learning has been generated via value co-creation?	Number of Resources Created, Training Sessions	Customer Feedback, Resource Drive Folders or Libraries
Sustainability of Social Initiatives	Are the social and ecological initiatives long-lasting?	Profit Stability, Frequency of Repeated Initiatives	Financial Reports, Engagement Metrics
Innovation and Agility	How agile are the digital strategies to the changing needs in the market & community?	Number of New Initiatives and Number of Adaptations Made	Stakeholder Feedback, Customer Data, Review Meetings

Table for Assessment of Digital Strategies and Measurement of the Impacts specifically highlights the question of what's the tangible effect on unprivileged communities? Since the digital literacy and access among stakeholders, particularly in marginalized communities are at different levels, we thought discussing above-mentioned strategies to overcome these barriers would strengthen the practical application of the DSC framework, especially in regions with low digitalization.

3. 5. 3 | Limitations and Future Research

This research provides chance to explore how social enterprises can enhance their digital capabilities while co-creating value with their respective communities. However, this research also depicts few limitations, which should be addressed in future research.

Methodologically, our reliance on the case study approach restricts the generalizability of our findings. Nevertheless, since the concept of Data-driven Social Co-creation concerns to social entrepreneurship broadly, it could potentially be extended from Azerbaijan to other European social enterprises and even traditional businesses as well. Therefore, we recommend expanding the investigation to other firms in various industries interacting with digitalization and value co-creation.

Furthermore, as a newly proposed concept, Data-driven Social Co-creation could benefit from quantitative validation and testing. Future studies could develop measurement scales for DSC and validate instruments to assess this capability rigorously. Such endeavors would enable researchers to conduct explanatory research, test casual relationships and explore the topic across diverse organizational contexts. Additionally, further research could delve into the mechanisms and relationships within DSC framework to enhance theoretical understanding of Data-driven Social Co-creation. This could involve quantitative testing of propositions regarding interplay between different constructs such as efficiency, resource mobilization, feedback loops or data utilization. By validating the network of Data-driven Social Co-creation could empower its theoretical foundations and evaluate its predictive capacity.

The existing body of research on social entrepreneurship lacks applicability across diverse contexts and fails to sufficiently explore the interplay between digitalization, value co-creation and social entrepreneurship. To bridge this discrepancy between theoretical insights and practical realities, there is a pressing need for a research agenda delving into themes outlined in this section. Another recommendation for advancing research on correlation between digitalization, value co-creation and social entrepreneurship involves examining subject through lens of additional conventional marketing and business topics, such as market turbulence and crisis. Additionally, since our research didn't cover the digitalization's impact on value co-creation for social entrepreneurship during the crisis times other than COVID-19, we left it out, however, due to its great potential, we emphasize it as future research direction too, since there was also Karabakh, Ukraine war, energy crisis and other turbulences.

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4. Study 3: Longitudinal Case Studies

"Phoenix Effect: How Crisis affects the way Social Enterprises employ Digitalization for Collaboration"

Crisis and market turbulence can cause changes in digitalization and value co-creation of social enterprises. In this regard, this study explores fundamental theoretical mechanisms that connect digitalization and value co-creation with each other for social enterprises within the context of crisis and market turbulence. The article aims to identify how crisis and market turbulence affect the way social enterprises employ digitalization to enable value co-creation. We conduct longitudinal case studies of 10 in-depth face-to-face interviews with the social entrepreneurs from Azerbaijan and synthesize the findings from primary and secondary data. Consequently, we reveal that social enterprises using digital collaboration can have more resilience against the crisis. Simultaneously, crisis and market turbulence affect the way social enterprises use digitalization for collaboration through the new phenomena which we call Crisis-Resilient Digital Ecosystem, Transformative Resilience Network, and Synergistic Economic Resilience which were tailored by their sub-categorical elements such as Crisis-Responsive Entrepreneurial Mindset; Digital Transformation; Value Co-Creation within Community; Agile Work Environments; Economic and Market Considerations. Finally, we recommend Interconnected Resilience Framework which shows the relationship between market turbulence and social entrepreneurship's digital collaboration. This model and event-ordered matrix is the main theoretical contribution to social entrepreneurship and crisis literature.

- **4. 1 | Introduction of Study 3**

Techniques of social effect have drawn a colossal amount of interest from policymakers and professionals, explicitly in the social business field (Scheuerle – Schmitz 2016; Bauwens et al. 2019; Maseno – Wanyoike 2022). Social entrepreneurs are the employers of their own record, while primarily chasing after supporting social purposes (Bierhoff 2002), and foster plans of action that intend to resolve social issues, which can have a social effect (Selsky – Parker 2010). And social entrepreneurship in general is an enterprise type

which is aimed to benefit society instead of only maximizing profits of individual shareholders, and this business form is likely to guarantee an altruistic version of capitalism that does not evaluate all human exercises in business terms (Roberts – Woods 2005). Social enterprises' fundamental purpose is positive societal change and prosperity (Dacin et al. 2010), and it elaborates the ways of fostering innovative solutions to tackle the problems of our world (Wu et al. 2020).

While social enterprises are on the rise, digital transformation is also radically changing business operations. Digitalization is defined as the increased use of digital technology by an organization, industry or country (Brennen – Kreiss 2016). Even though it has benefits like value co-creation (Lin et al. 2019), allowing social enterprise and its customers to jointly shape the product or service experience to align with their needs (Prahalad – Ramaswamy 2004), there can be digitalization's negative consequences in social and ecological sides and overall, there is limited information available on its consequences (Elia et al. 2020).

The COVID-19 pandemic resulted in insufficient government response, which in turn spurred a rise in social initiatives and digital entrepreneurship aimed at enhancing stakeholder satisfaction (Muñoz et al. 2022). By linking systematic literature review findings, it becomes clear that COVID-19 accelerated digital transformation, and this digitalization had a positive impact on the performance of social and ecological enterprises (Mursalzade et al. 2023). However, COVID-19 was not the only crisis event that happened affecting social entrepreneurship, that's why, there is need for research connecting crisis, market turbulence and social entrepreneurship's digital collaboration.

Crisis is an unwanted, unexpected, unpredictable situation, which cause disbelief and uncertainty (Milašinovic – Kešetovic 2008). For example, a crisis can be COVID-19 pandemic or the war in Ukraine. Similarly, market turbulence is a state of volatility and uncertainty in the market, where prices and customers' needs fluctuate rapidly and unpredictably (Bakir et al. 2021). For example, after pandemic, the local economy in Azerbaijan also got affected heavily and prices increased immensely. Since COVID-19 was not the sole crisis, there is necessity for research on crisis and digital collaboration.

There is usually a collaborative dynamic between social entrepreneurship, digitalization and value co-creation, which amplifies the benefits of each: Digitalization streamlines communication, enabling social entrepreneurs to co-create value with various stakeholders; This interconnectedness has the potential to drive social change, while technologies help social entrepreneurs develop innovative solutions and respond to changing needs (Goyal et al. 2021; Aisaiti et al. 2021; Chandna 2022). So, there is obvious impact of digital collaboration on social and ecological entrepreneurship: Digital transformation can stimulate sustainable endeavors (de Bernardi et al., 2019), and social entrepreneurial performance (Wan – Liu 2021), while cutting costs (Aisaiti et al. 2019; Goyal et al. 2021). Digital collaboration empowers accessibility, inclusion of diversity (Srivastava – Shainesh, 2015; Muñoz et al. 2022) and tends to raise the importance of social entrepreneurship (Ratten 2022).

Although there are several separate research both on the topics of crisis and market turbulence; social enterprises' digitalization and the value co-creation, yet there is limited research investigating exactly crisis effect on social entrepreneurship's digital collaboration, and there is solely one study about social digital collaboration in the context of traditional manufacturing companies (Lenka et al. 2017). Additionally, from practical side, social entrepreneurs can think that after certain crisis event start-up ecosystem or industry still isn't utilizing digital collaboration very well and can level up with their digital transformation and value co-creation, however many still don't understand the interconnectedness of these phenomena. Therefore, further research is important to comprehend the effects of crisis and market turbulence from new perspectives with different social and ecological ideals. *Thus, we have the aim of tying crisis with social entrepreneurship's digital collaboration and analyzing changes in social enterprises over time: before, during and after the crises. By highlighting this research aim, we try to answer the following research question: How does crisis affect the way social enterprises employ digitalization for collaboration?*

Applied methodology of longitudinal case study had the phases of conducting the interviews, transcribing, translating, editing and analyzing them via NVivo software to create new theoretical concepts. Later, we used Event Ordered Matrix to explain the changes in social enterprises over time for 10 years: How were certain new theoretical

concepts within 3 different time periods: before, during and after the crisis. To address the research problem, the research use dataset of 10 in-depth interviews from Azerbaijan to conceptualize 5 codes namely, Crisis-Responsive Entrepreneurial Mindset; Digital Transformation; Value Co-Creation within Community; Agile Work Environments; Economic and Market Considerations. After revealing these 5 concepts, we came up with the new phenomena of Cridieco - Crisis-Resilient Digital Ecosystem, Transrenet - Transformative Resilience Network, and Synecresi - Synergistic Economic Resilience. Finally, we recommend Interconnected Resilience Framework which shows the relationship between crisis and social enterprises' digital collaboration, and which is the main theoretical contribution to the respective literatures. Lastly, we also recommend a research agenda on crisis and social entrepreneurship's digital collaboration.

- **4. 2 | Literature Review for Study 3: Crisis Literature**

4. 2. 1 | Importance of Digitalization for Social Entrepreneurship

Even though there is much research on social entrepreneurship and entrepreneurship education, their essential point is exploring the relationship of entrepreneurship and knowledge management (Jáki – Huszák 2023). It is natural there is research focusing on management students getting knowledge from digital enterprises on how to improve an entrepreneurial mindset (Beke et al. 2023), and at the same time, there is research with start-up founders as a different entrepreneurial category (Virágh et al. 2024). However, research with social enterprise' founders is rare, especially the ones focusing on crisis and digital collaboration. Digital tools that enable communication, knowledge management and value co-creation between entrepreneurs and consumers have fundamentally transformed how people connect (Frau et al. 2023). Digitalization addresses societal challenges (Zahra 2021), enhances sustainability (de Bernardi et al., 2022). Additionally, digital financing serves as a key enabler for individuals tackling societal issues (Martin 2020; Chadna 2022), while also reducing costs (Aisaiti et al 2019; Goyal et al. 2021). In additions with low digitalization levels, the lack of social enterprises may negatively impact national well-being (Torres – Augusto 2020). Furthermore, digitalization particularly using big data, shows a positive relationship with employee performance in social entrepreneurship (Wan

– Liu 2021). It also enhances geographical accessibility, lowers costs, and ultimately promotes inclusivity in healthcare services (Srivastava – Shainesh 2015).

2.2 | Integration of Value Co-Creation to Digitalization in Social Enterprises

Social and ecological enterprises utilize value co-creation to help promote a more inclusive, accessible, and equitable society (Muñoz et al. 2022). By integrating value co-creation to digitalization, OurCityLove social enterprise and its digital application play a crucial role in addressing service gaps (Lin et al. 2019). During the pandemic, instances of value co-creation also rose, with collaborative efforts among government, social enterprises, and marginalized communities emerging, which accelerated value co-creation and increased the focus on social entrepreneurship (Ratten 2022).

In practice, there is often a collaborative dynamic among digitalization, value co-creation, and social entrepreneurship, which enhances the benefits of each: Digitalization streamlines communication, enabling social entrepreneurs to co-create value with various stakeholders; interconnection has the potential to drive social change; and technologies support social and ecological entrepreneurs in developing innovative solutions and adapting to changing needs (Loukopoulos – Papadimitriou 2022; Chadna 2022; Mursalzade et al. 2023).

Moreover, all three concepts align closely with the Sustainable Development Goals set by the United Nations: Progress toward achieving the SDGs can be accelerated through digital transformation, which promotes social development, while social entrepreneurship focusing on innovative sustainable business models aims to generate positive social and ecological impacts (Lin et al. 2019; Ratten 2022; Mursalzade et al. 2023).

2.3 | The Role of Crisis and Market Turbulence

In addition to digital collaboration of social enterprises, it is also interesting to observe and analyze how crisis and market turbulence may affect them. Although the initial reference to turbulence originated in physics (McDonough 2007), this initially narrow area of study quickly broadened and gained significant relevance for economics: For example, Glazer and Weiss (1993) defined turbulent environment as constantly dynamic, volatile, and exhibiting sharp discontinuities and uncertainties. This phenomenon is primarily characterized by 3 factors: sharp changes, information deterioration, and difficulty in prediction.

Kotler (2009) attributes the increasing influence of changes in turbulent environments on firms to the new interconnectivity of actors in global economy which he refers to as the butterfly effect. The main challenge arising from this type of environmental impact is the unsustainability of a reactive strategy; for companies in rapidly changing markets or industries, a shift toward a proactive approach has become increasingly necessary (Fan et al. 2013). For deterioration of information, a significant number of changes occurring within a given time frame has long been a key factor (Dess – Beard 1984), which undermines the reliability of forecasts. Subsequent researchers have aimed to frame this in terms of the time sensitivity of information (Glazer – Weiss 1993), relating to how information loses value from one period to the next. Paradoxically, despite a decline in quality, information may still be more valuable to managers, as uncertain environmental factors heighten the stakes of decisions, such as prior to a potential price war (Dekimpe et al. 2011). The decline in information quality results from the frequency of sharp changes; while these conceptual elements render predictability almost self-evident, we must also consider the multiplicity of factors involved, including the shock-like nature of these changes: For example, Mudambi and Swift (2010) suggest that the initial stages of turbulence mark the start of a self-reinforcing process of self-excitation, where reactions to be unexpected differ from standard practices and interact to create a punctuated equilibrium shock.

Kohli and Jaworski (1990) identified 2 environmental moderators that can be viewed as types of turbulence for further exploration: market turbulence and technological turbulence. Market turbulence is defined as “a change in the composition and preferences of buyers”,

a factor that is directly related to the level of competition (Kohli – Jaworski 1990, p. 14). To assess this, Jaworski and Kohli (1993) developed a scale with five items such as Customers' needs in industry changing significantly over time; Customers consistently seeking new products; Demand for products and services from customers who have not previously sought them; New customers having different needs for products or services compared to past customers; Continuing to serve many of former customers today. We also take this scale and definitions of turbulence for our interview protocol. There is limited research on crisis's impact on digital collaboration of social enterprises, that is why we decided to investigate how crisis and market turbulence can affect it.

Although separate research on crisis, market turbulence and social entrepreneurship's digital transformation and collaborations exist, nevertheless empirical studies precisely researching crises' impact on social enterprises' digital collaboration is rare. As a result, further studies are important to comprehend the impacts and the relationship between these concepts. Due to the gap between mentioned four literature streamlines, we try to investigate underlying mechanisms that tie these four together.

2.4 | The Concept of Resilience

Since the concept of resilience is also involved in this study, we also have to look at this phenomenon. Resilience is commonly defined in academic literature as the ability of a system, individual, community or organization to withstand, adapt to, and recover from adversity, stress, or change, while maintaining or quickly regaining functionality or well-being, and this concept is widely studied across multiple disciplines, leading to various nuanced definitions in engineering, psychology, ecological sciences and others: For example, resilience in engineering and systems science refers to the ability of a system to return to its original state after a disturbance as quickly as possible (Hollnagel, 2006). In psychology, resilience is defined as an individual's capacity to cope with stress, trauma, or adversity and bounce back from negative experience (Luthar, Cicchetti, & Becker, 2000). In ecology, resilience is the ability of an ecosystem to absorb disturbances and reorganize while maintaining core functions and structures (Holling, 1973).

At the same time, the concept of resilience is also present in social and organizational sciences. As an illustration, we can look at social resilience, as well as organizational resilience: In sociology, resilience relates to a community's ability to recover from crises, such as economic shocks or natural disasters, through adaptive strategies (Adger, 2000). In business and management, resilience refers to a company's capacity to adapt to disruptions, innovate, and sustain competitive advantage during crises (Lengnick-Hall, Beck, & Lengnick-Hall, 2011). Since the concept of resilience is also involved in this study, we also had a look at this phenomenon from social, business and managerial perspectives.

- **4. 3 | Methodology: Research Design, Data Collection and Data Analysis**

Research had a multiple-case study for theory building and longitudinal case study to analyze the change in social and ecological enterprises over time. Cases are examined for various hypothetical purposes, such as revealing unusual characteristics, replicating results from different cases, conducting contradictory replications, ruling out alternative explanations, and refining the evolving hypothesis (Eisenhardt – Graebner 2007). To address the research question, first and foremost, we employ a multiple case study approach (Yin 2009). This method facilitates a thorough analysis of complex social phenomena and enhances the generalizability of findings, as it permits the replication of results across multiple cases, thereby supporting theory development (Eisenhardt – Graebner 2007).

4. 3. 1 | Case selection

Our research derives its conclusions from social enterprises, as focusing on social entrepreneurship is crucial for tackling the challenges society currently faces. We utilized a theoretical sampling strategy to choose cases that would likely enhance the existing theory (Eisenhardt – Graebner 2007). For our study, we selected cases with specific pre-defined characteristics to eliminate any selection bias. To qualify for inclusion, firms had to 1) address social or ecological issues, making them social or ecological enterprises, and 2) provide access to key informants such as founders, co-founders, or chief managers. Furthermore, we determined the specific problems these enterprises are addressing, their profiles and target audiences. This method enabled us to construct a more thorough and precise theoretical

framework while minimizing the potential for bias in our selection process (Eisenhardt – Graebner 2007; Yin 2009). From a list of 30 entrepreneurs, we ultimately conducted 10 in-depth interviews. We concluded our research after analyzing these cases, having reached theoretical saturation (Saunders et al. 2018).

We selected Azerbaijan as the primary area for case selection for three main reasons. First, Azerbaijan is a country transitioned from a socialist to a capitalist regime, characterized by its oil-rich developing economy (Aliyev et al. 2016). Given the impact of the oil economy on social and ecological enterprises, this article emphasizes cases from Azerbaijan. Second, research indicates that social entrepreneurship tends to flourish in nations with developing economies and relatively low welfare levels (Urban – Kujinga 2017; De Beule et al. 2020; Torres – Augusto 2020). The third reason relates to the practicality and ease of data collection within our specific time frame. However, it is important to note that the findings being primarily based on Azerbaijan may present limitations and suggest directions for future research. Moreover, we can also underscore the influence of the Azerbaijani cultural context on the adoption and effectiveness of digitalization in social enterprises, as cultural factors often significantly affect technology adoption and could offer valuable insights into why certain digital strategies succeed or fail in certain settings.

Additionally, we can also highlight the influence of Azerbaijani cultural context on adoption and effectiveness of digitalization in social enterprises during crises and market turbulence, since cultural factors often play a crucial role in technology adoption and could provide valuable insights into why certain digital strategies succeed or fail in specific environments. Even though there are nearly 100 social enterprises in Azerbaijan, we had the pool of 30 social entrepreneurs that we could have face-to-face in-depth interviews with. Selection criteria of these 30 social entrepreneurs out of almost 100 social enterprises was that the respondents have to be English speaking, their social enterprise having online presence since we were investigating the phenomenon of digital transformation, and at the same time, their social entities have to be involving clients and community, since we also were researching the value co-creation phenomenon in the context of social entrepreneurship. Last, but not least, we also had the criteria for social enterprises to face some sort of crises and market turbulence in their history, so that we can study these phenomena as well. Out of 30 social entrepreneurs in our list, we finally conducted 10 in-depth interviews. We concluded our research after studying 10th case, as theoretical saturation has been achieved (Saunders et al., 2018).

Theoretical saturation is a key concept in qualitative research, particularly in grounded theory and other inductive methodologies, referring to the point at which no new themes, concepts, or insights emerge from data collection and analysis, meaning that further data collection would likely yield redundant information (Glaser & Strauss, 1967). It ensures that the study has captured a comprehensive understanding of the phenomena under research, decreasing the risk of leaving out important aspects; it enhances research rigor: by reaching saturation, researchers demonstrate that they have collected enough data to support well-grounded conclusions, improving the validity and credibility of findings; it prevents unnecessary data collection: continuing data collection beyond saturation is often inefficient and does not add meaningful insights; this saves time and resources while maintaining methodological soundness (Guest, Bunce, & Johnson, 2006). Theoretical saturation also supports the theory development by ensuring that emerging theories are well-developed, internally consistent, and robust enough to explain the studied phenomena (Charmaz, 2006).

4. 3. 2 | Data collection

To minimize the risk of disseminating inaccurate information, it is crucial to avoid retrospective sense-making; thus, we integrated data from multiple sources (Miles – Huberman 1994; Eisenhardt – Graebner 2007). We conducted interviews with knowledgeable individuals who were eager to share their insights on the subject matter (Kumar et al. 1993). Specifically, 10 out of 30 social entrepreneurs based in Azerbaijan agreed to participate in our research and engaged in the face-to-face interview phase. We utilized a semi-structured interview protocol to investigate how crisis affects the way social enterprises use digitalization for collaboration. The interviews were conducted online using the Microsoft Teams platform, which facilitated the recording of both video and audio. These interviews took place in April 2024 and lasted 59 minutes on average. After transcribing the interviews, we sent the transcripts to the informants for clarification, ensuring that the edited versions accurately reflect their intended meanings. 9 out of 10 interviews were conducted in English, while one was translated from Azerbaijani.

Table 1. Overview of the Longitudinal Case Studies. Source: Own compilation.

Profile of Social Enterprise	Solved Problem	Target Group	Primary data - Interview	Secondary Data – Description
Crowdfunding for Social Projects and Social Enterprises	Education and Finance	Social Enterprises and Events	59 minutes	Owned Social Media page, Website
Handcrafts; Comics	Environment, Social Inclusion	Youngsters, Young Adults	56 minutes	Owned Social Media page
Eco-friendly Reed Bags and Cultural Community	Unemployment, Cultural Preservation	Rural Women, Ethnic Minorities	53 minutes	Owned Social Media page
Comic Book Studio	Environment, Social Inclusion	Youngsters, Young Adults	78 minutes	Owned Social Media page
Digital Support Platform	Education and Finance	Social event and Enterprises	29 minutes	Owned Social Media page, Website
Rubik's Cube Competitions	Education, Social Inclusion	Youngsters, Young Adults	84 minutes	Owned Social Media page
Eco-friendly Reed Bags and Cultural Community	Unemployment, Cultural Preservation	Rural Women, Ethnic Minorities	87 minutes	Owned Social Media page
Cashback Donations, Support Packages	Support for Charity Events	Social Fundraisers, Companies	72 minutes	Owned Social Media page, Website
Traditional Socks	Unemployment, Cultural Preservation	Rural Women, Ethnic Minorities	35 minutes	Owned Social Media page, Website
Comics Studio; Digital Support Platform	Environment, Social Inclusion	Youngsters, Young Adults	36 minutes	Owned Social Media page

We collected data from multiple sources, including semi-structure interviews, the enterprises' social media pages and their own official websites. By triangulating these data sources, we aimed to produce more reliable findings (Eisenhardt 1989; Yin 2008).

4. 3. 3 | Data analysis

With a theory building approach, case summaries of social and ecological enterprises were used based on primary data as the foundation via NVivo 10 software to progress the data from specific to general through 4 coding steps (Cabiddu et al. 2018; Saldana 2015; Frau et al. 2022). We had inductive and deductive methods of analysis: We had a deductive approach with existing literature to interpret the qualitative data related to crisis, market turbulence, digitalization, value co-creation and social entrepreneurship, for example, some of the codes were used both by interviewees and literature; we also had an inductive approach to lay out main fundamental themes, from which we improved new theoretical concepts (Kennedy – Thornberg 2018) by identifying reflective patterns of the key concepts.

After our thorough analysis of the dataset, a detailed coding scheme has emerged out of face-to-face online interviews. By coding every relevant keyword and quote, we created initial codes. Considering our research question, subsequent analysis appeared from coding our

dataset. Based on the most frequently used and peculiar quotes, insights and key results from 10 interview transcripts, we had subsequent analysis (Fig. 1).

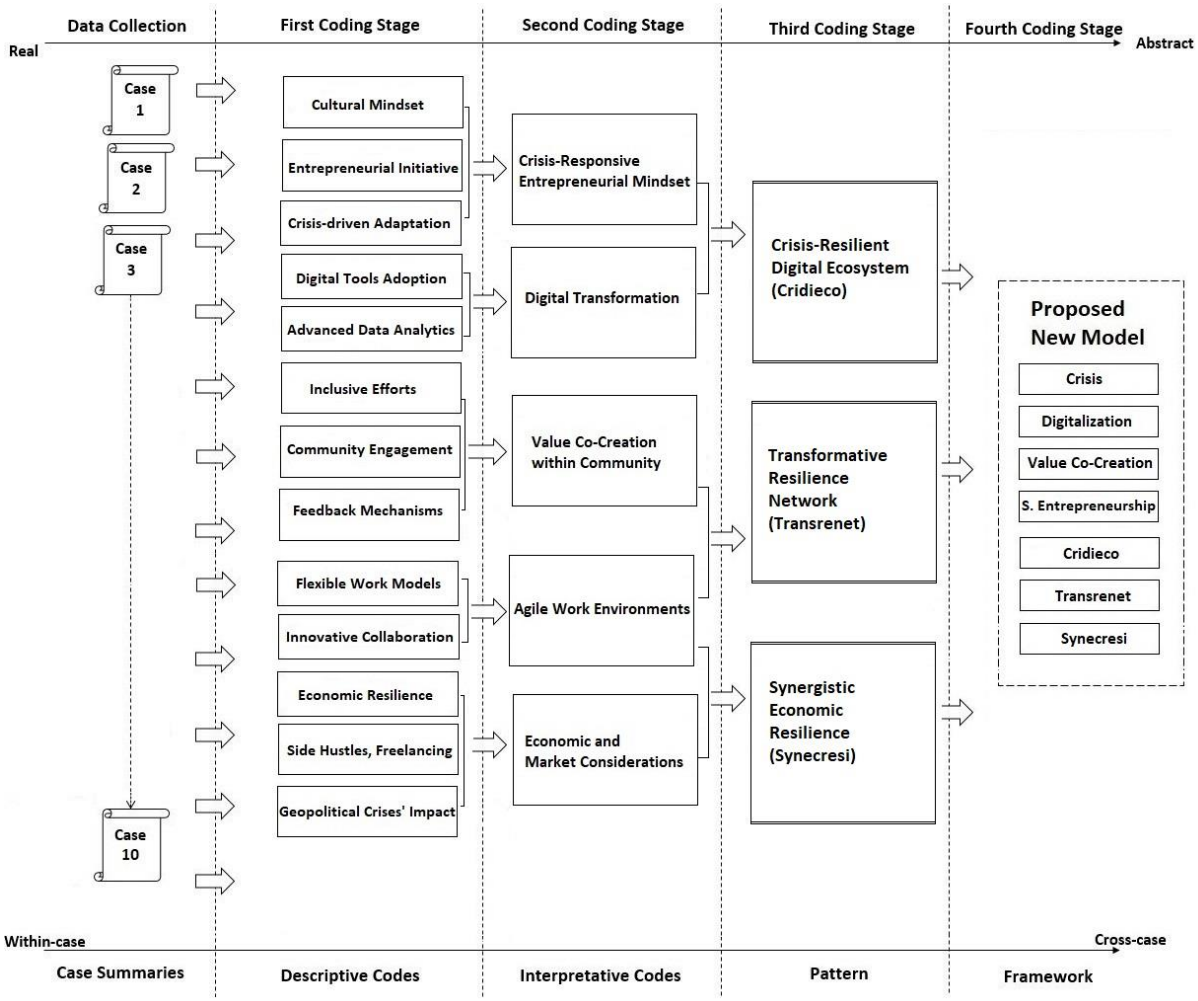

Fig. 1. Data analysis process for longitudinal case studies in Social Entrepreneurship. Adapted from Saldana (2015), Frau et al. (2022) and Mursalzade (2024).

4. 3. 4 | Detailed Coding Process

In Detailed Coding Process, we reveal the summaries of multiple case studies from interview transcripts which present keywords and codes which are important for the qualitative analysis. After the qualitative analysis of case summaries, the first coding stage shows generic findings regarding the relationship between crisis, market turbulence, social entrepreneurship, digitalization, and collaboration. At the 1st coding stage, some of the mostly stated keywords are the basis of descriptive codes (Cultural Mindset, Entrepreneurial Initiative and others).

Since there is a gap between the four literature streams: crisis, social entrepreneurship, digitalization and collaboration, the next coding stages synthesize available knowledge and generic codes into more detailed summarizing codes. As an illustration, at the 2nd coding stage, they make up new interpretative codes such as Crisis-Responsive Entrepreneurial Mindset; Digital Transformation; Value Co-Creation within Community; Agile Work Environments; Economic and Market Considerations (Fig. 1). Previous codes of Cultural Mindset, Entrepreneurial Initiative, Crisis-driven Adaptation can be combined under the theoretical code of **Crisis-Responsive Entrepreneurial Mindset**. Previous codes of Digital Tools Adoption, Advanced Data Analytics, Trust and Security can be linked under the code of **Digital Transformation**. Inclusive Efforts, Community Engagement Strategies, Feedback Mechanisms raw codes can be associated with **Value Co-Creation within Community**. Flexible Work Models, Innovative Collaboration Systems, Work-Life Balance naturally fit in with **Agile Work Environments**. Economic Resilience, Side Hustles and Freelancing, Impact of Geopolitical Crises on Markets can be associated with **Economic and Market Considerations.** By associating these raw codes into more detailed theoretical concepts, in-depth perception of underlying theoretical mechanisms and market turbulence dynamics in social and ecological enterprises, can be achieved. Thus, researchers and practitioners can investigate these phenomena in detailed ways, contributing to improvement of theoretical frameworks and managerial relevance.

Lastly, five concepts: Crisis-Responsive Entrepreneurial Mindset; Digital Transformation; Value Co-Creation within Community; Agile Work Environments; Economic and Market Considerations tailored new codes of **Crisis-Resilient Digital Ecosystem, Transformative Resilience Network, and Synergistic Economic Resilience** in the 3rd coding stage and contributed to the final proposed conceptual model - **Interconnected Resilience Framework**

in the 4th coding stage.

After Multiple Case Study and its coding stages, we applied Longitudinal Case Study's data analysis with the Event-Ordered Matrix (Miles – Huberman 1994; Frau et al. 2020). We utilized a qualitative retrospective longitudinal single-case study, which is appropriate for exploring "how" questions related to a series of events (Yin 2008). The longitudinal design enhances the validity of the study, enabling the examination of complex, multi-variable phenomena that evolve over time (Eisenhardt 1989). The analysis spans from the social enterprises' founding in 2015 to 2025. This study utilized an event-ordered matrix (Miles – Huberman 1994; Frau et al. 2020) to connect events suitable to the social enterprises' digital collaboration and crisis management strategies with each of three time periods: 2015-2019 - Before the Crisis: Pre-COVID, Pre-War, Pre-Wildfires; 2020-2021 - During the Crisis: COVID-19, 2020 War, Wildfires; 2022-2025 - After the Crisis: Post-COVID, Post-War, Post-Wildfires (Table 3).

Table 2. Summary of Identified Concepts. Source: Own compilation.

Concept	Definition	Illustrative Quotes
Crisis-Resilient Digital Ecosystem **(**Cridieco)	Crisis-Resilient Digital Ecosystem is an ecosystem where social and ecological enterprises thrive during and after crises by embracing *crisis-responsive entrepreneurial mindset* and *digital transformation.*	Q1: *"COVID gave us opportunity to digitalize… But it wasn't enough, we also had problem with mindset of our local people. There's one project - website and in the other part there's one donor, donor doesn't believe that: "What is this website? I will pay through this; the money will arrive to the account or the idea owners? Why should I spread my idea with others? What if someone takes it and uses it?" So, lack of entrepreneurial mindset and cultural barrier in local community, especially when it comes to mistrust." (Case 1).* Q2: *"Overall, the integration of digital tools has transformed the dynamics of collaboration within our social enterprises. It made things more efficient, particularly during difficult times. These changes made us to navigate challenges more effectively and continue driving positive impact in our mission to create meaningful social and ecological change." (Case 2).* Q3: *"People prefer to work under someone's orders. To initiate something independently, to correspond, to take responsibility, to make something is hard, even though they would see it more profitable than to wait someone's order." (Case 3).* Q4: *"Crisis can impact the social enterprises a lot. Social businesses are changing their mindsets and approaches slowly and react to tough times. So, we need to be innovative, use more digital tools and data analytics to stimulate operational processes. Digitalization helped a lot in our work during crisis, and it can also help others to be more resilient towards the crisis." (Case 5).* Q5: *"During war we had a lot of social fundraising. Overall, people got affected by both development of technology and people's mind and approach. So, people are just trying to switch traditional charity to more technological one, which is more convenient, secure and easy… A crisis gives problems and, in our case, good chance: People start caring about other people by giving more charity, by becoming kinder to each other. Thus, it makes a situation better overall." (Case 8).* Q6: *"During COVID-19, social enterprises quickly adapted to more advanced digital tools such as video conferencing for remote work or social media for outreach and fundraising, and online project management tools for better coordination. So, this evolution enabled them to stay connected, continued their mission and growth despite the challenge they faced." (Case 10).*
Transformative Resilience Network (Transrenet)	Transformative Resilience Network is a phenomenon focusing on how social enterprises' networks transform challenges into opportunities through collective resilience and empowers *value co-creation within communities* while adopting *agile work practices* for navigating crises.	Q7: *"The evolution of digital tools influenced how we collaborate with others to create value within our social enterprises. For example, we started to have Focus group for proof-reading from youngsters before publication, increasingly relied on online platforms, such as project management software, collaborative document sharing tools, and communication apps, to facilitate teamwork and coordination."* (Case 2). Q8: *"We have remote work tradition kept from COVID-19. And collaboration is also enhanced including virtual meetings, training sessions and design collaboration. The skills have been enhanced and adopted to the new reality. Due to this COVID-19 issue, flexible work models also developed which you have find very useful and there is no need to come every day from 9 to 5 work in case you don't have any urgent tasks to complete."* (Case 3). Q9: *"COVID also raised the issues regarding physical health, but also mental health, life-work balance. It was a digital collaboration: You didn't see the people, but still you worked together, and it was a collaborative effort - more flexible, very easier. That's when people realized that it was possible to have flexible jobs, more task oriented, way less time-consuming jobs. And it would allow them to have more free time for themselves."* (Case 4). Q10: *"AI, exactly ChatGPT boomed in 2021, 2022 and stimulated lots of business. Although in our social enterprise it is difficult to adapt this, still it can be used for designing content for social media, designing certificates for competitions and so on. So, it can be used somehow and can be useful to save time and financial costs. It can increase work-life balance, work quality more easily."* (Case 6). Q11: *"We saw that such crisis can happen. We must be ready, every other company can face, it's important to stay proactive, stay agile and stay flexible"* (Case 7). Q12: *"Collaborating with other brands helped us to be more effective. Especially during the war. Even the diaspora got really excited about helping Azerbaijani brands. We connected with other brands with live streams. Since then, I've became more active on social media, where before I was just posting occasionally like "this is a sock". So, this taught me the value of community and using these digital things for that. I learned through COVID and war, that it's important to stay*

		connected with our customers by telling the stories of the women and making sure that's one of the front parts of our company." (Case 9). Q13: *"So, we will see the remote collaboration and innovative solutions. We will witness the development of innovative solutions tailored to specific industries and challenges for their optimizing workloads and creating new avenues for value creation. The feature of using digital tools to work and create a valid direction. And continued innovation and adaptation and empowering individuals and organizations to overcome challenges in an increasingly digital world."* (Case 10).
Synergistic Economic Resilience (Synecresi)	Synergistic Economic Resilience is defined by a synergy between agile work environments and economic market considerations, suggesting that synergy is occurring where social enterprises are creating economic resilience in the market through digitalization and value co-creation: It implies that the social entrepreneurs having digital collaboration are more resilient against the crises, thanks to *agile work environments* and due to *economic market considerations.*	Q14: *"COVID caused lots of layoffs, crisis in the economy. And then because of this, remote work or working from home emerged. People realized that some of the things back then weren't necessary, and now they could do many things online. Well, maybe some didn't rely on online payment or maybe some didn't have the digital skills to do so, but overall, their digital skills increased, side hustles such as drop shipping, affiliate marketing increased, and at the same time within the business environment, the IT became more task-oriented and focus on AI raised."* (Case 4). Q15: *With agility, companies can offer many new side products or services, there can be more growth, fast entry to market, faster import and production." (Case 5).* Q16: *"After the pandemic, we had war and post-conflict stress. Everyone was worried because we are in hot pot between Russia and Iran. So, geopolitics of crisis also impacting… People used digital tools to learn trading in the cryptocurrencies, digital trading methods like drop shipping. The people started to investigate this drop shipping, and they started to sell online. Basically, you buy products from China, and you open your account in the Shopify, sell in USA because in China it's cheaper while you don't have a warehouse, but just website"* (Case 7). Q17: *"We've learned to sell things digitally, create patterns of our socks. So, it's like an actual digital download that you buy: some women could sit at home working in America and Europe. It's a certain knitting pattern - digital items that have helped passive income: we've made cards and stickers like with a sock on them. And with Azerbaijan on it, so, it's like something kind of related. But it's also like a way that we're using digital things to support our business."* (Case 9). Q18: *"I believe that scheduling regular virtual meetings or check-ins with your team using video conferencing tools helps everyone stay connected, discuss progress and address this challenge together and encourage open communication. That creates channels for open communication and idea sharing using WhatsApp or Discord. It's encouraging everyone to share their ideas and concerns freely and using Google Documents, Microsoft Teams to collaborate on projects efficiently, and foster supportive inclusive virtual environment. Social interactions and activities that promote mental and emotional wellbeing."* (Case 10).

- **4. 4 | Findings of Study 3: Interconnected Resilience Framework**

4. 4. 1 | Analysis of Primary Findings

Firstly, Cultural Mindset, Entrepreneurial Initiative, Crisis-driven Adaptation combined under one code of **Crisis-Responsive Entrepreneurial Mindset.** Cultural Mindset is about attitudes towards adaptive solutions: after the crisis, there was more efficient navigation of challenges (Quote 2 in Table 2). Our respondents observed that while before the crisis there was low levels of Entrepreneurial Initiatives, and risk-seeking proactive behaviors; after the crisis, the number of social and ecological initiatives increased (Quote 1, 4). Crisis-driven Adaptation is about shifts in mindset of people due to external pressures like pandemics, wars, or wildfires: there

was increased ecological awareness after wildfires, increased donations, support, inclusive and human-centric focus after war and pandemic in several social and ecological enterprises in our longitudinal case study (Quote 5).

Secondly, the codes of Digital Tools Adoption and Utilization, Advanced Data Analytics are gathered under the code of **Digital Transformation**. Digital Tools Adoption is about increased reliance on remote work technologies, digital communication, online sales, and many others (Quote 6). Advanced Data Analytics refers to the usage of advanced analytics for decision-making, performance monitoring, and engagement assessments, cost-benefit analysis, measuring community involvement and satisfaction (Quote 4).

Thirdly, Inclusive Efforts, Community Engagement Strategies, Feedback Mechanisms raw codes can be associated with **Value Co-Creation within Community.** Inclusive Efforts are about including all and giving value to everyone based on empathy, despite marginalization. So, the social values and inclusion are the basis: it can be about women empowerment initiatives, cultural awareness, representation, accessibility, corporate social responsibility emphasis, solidarity during crises, inclusion and diversity, as they've been mentioned in most of our cases. Community Engagement Strategies refer to the importance of creating long-term social connections, community bonds via collaboration platforms and feedback. Community Engagement Strategies play a crucial part in this: strategies for managing public relations during crises reveals that Storytelling - Emphasizing personal narratives to connect with audiences are powerful (Quote 12). Lastly, Feedback Mechanisms are about utilizing focus groups, regular check-ins for continuous assessments, adjustments, transparency, open communication channels in collaboration, establishing clear protocols, communication channels for information sharing and knowledge management (Quote 7).

Fourthly, Flexible Work Models and Innovative Collaboration Systems naturally fit in with **Agile Work Environments.** Flexible Work Models stand for remote work dynamics, fast experimentation, adaptability, encouraging creativity, agility, and hybrid work arrangements (Quote 8, 9, 11). Similarly, Innovative Collaboration Systems are about the usage of digital tools for collaborations, resilience through innovation, collaborative endeavors and community support (Quote 13).

Fifthly, Economic Resilience, Side Hustles and Freelancing, Impact of Geopolitical Crises on

Markets can be associated with **Economic and Market Considerations.** According to our data analysis, Economic Resilience means Ability of social enterprises to adapt and thrive despite the economic instability, adaptation to post-crisis market changes, and growth of the digital start-up ecosystem (Quote 18). Moreover, Side Hustles and Freelancing is growth of alternative income sources, entrepreneurial ventures and side projects (Quote 17). Lastly, Impact of Geopolitical Crises on Markets: Effects of war and economic instability on social enterprises has also been mentioned by our interviewees (Quote 14, 16).

4. 4. 2 | Interconnected Resilience Framework

4.4.2.1 | Concepts of Crisis and Market Turbulence

Crisis is defined as an unwanted, unexpected, unpredictable situation, which causes disbelief and uncertainty (Milašinovic & Kešetovic, 2008), while Market turbulence is defined as "a change in the composition and preferences of buyers", a factor that is directly related to the level of competition (Kohli & Jaworski, 1990, p. 14). For example, a crisis can be COVID-19 pandemic or the war in Ukraine and Market turbulence is a state of volatility and uncertainty in the market, where prices and customers' needs fluctuate rapidly and unpredictably such as local economies getting affected heavily after COVID-19 and prices increasing immensely (Bakir et al., 2021).

Digital collaboration in social entrepreneurship is simply utilization of digitalization which is defined as a rise in computers or digital technology usage by an organization, industry or country (Brennen & Kreiss, 2016) for value co-creation which is defined as the joint creation of value by the enterprise and the customers, interacting and integrating their resources to co-construct better products and services to adjust to their needs (Prahalad & Ramaswamy, 2004).

Our main research question of how Crisis and Market turbulence affect the way social enterprises employ digitalization for collaboration is answered with our first proposition (Fig. 2): Crisis and Market Turbulence increased Digital Collaboration in Social Entrepreneurship: "COVID gave us opportunity to digitalize" (Quote 1 in Table 2).

Thus, based on our findings, we introduce our first proposition:

P_1: Crisis and Market turbulence increased Digital Collaboration in Social Entrepreneurship (Fig. 2).

4.4.2.2 | Concept of Digital Collaboration in Social Entrepreneurship

Digital collaboration in social entrepreneurship is simply using digitalization which is defined as a rise in computers or digital technology usage by an organization, industry or country (Brennen & Kreiss, 2016) for value co-creation which is defined as the joint creation of value by the enterprise and the customers, interacting and integrating their resources to co-construct better products and services to adjust to their needs (Prahalad & Ramaswamy, 2004).

According to our cases, there's positive relationship between Digital Collaboration in Social Entrepreneurship and Resilience: "Digitalization helped a lot in our work during crisis, and it can also help others to be more resilient towards the crisis." (Quote 4 in Table 2). "Overall, the integration of digital tools has transformed the dynamics of collaboration within our social enterprises. It made things more efficient, particularly during difficult times. These changes made us to navigate challenges more effectively and continue driving positive impact in our mission to create meaningful social and ecological change." (Quote 2 in Table 2).

Thus, based on our findings, we advance our second proposition:
P_2: Digital Collaboration in Social Entrepreneurship increased Resilience (Fig.2).

4.4.2.3 | Resilience-related Concepts of Cridieco, Transrenet and Syncresi

Firstly, **Crisis-Resilient Digital Ecosystem (Cridieco)** is an ecosystem where social and ecological enterprises thrive during and after crises by embracing crisis-responsive entrepreneurial mindset and digital transformation. This phenomenon can guide future research and practice in understanding how social and ecological enterprises can effectively respond to disruptions while enhancing their entrepreneurial efforts and digitalization strategies. So, Cridieco highlights the role of innovation in responding to crises. Metaphorically speaking, crisis-resilient digital ecosystem can be mentioned as *Resilience Nexus* where social entrepreneurial mindset meets digital connection in times of change or market turbulence and shows resistance towards disadvantages brought with the crisis.

Secondly, **Transformative Resilience Network (Transrenet)** is a phenomenon which is occurring within crisis-resilient digital ecosystem and is focusing on how social enterprises'

networks transform challenges into opportunities through collective resilience. So, Transrenet is a network which empowers value co-creation within communities and adopts agile work practices for navigating business challenges and crises in general. Other than Transrenet being an internal part of Cridieco, the difference between them is that Transrenet implies the importance of fostering collaborations among social enterprises. It states that digitalization is not enough on its own, but rather transformative resilience requires collaboration, and in this regard, value co-creation is a must. Metaphorically speaking, Transrenet can be mentioned as *The Phoenix Network* where social and ecological enterprises are rising stronger from adversity thanks to agile work practices and value co-creation. Thus overall, metamorphosis of these enterprises is emerging through crises.

Thirdly, **Synergistic Economic Resilience (Synecresi)** is a type of resilience within transformative resilience networks and in general within crisis-resilient digital ecosystem and it is defined by a synergy between agile work environments and economic market considerations: Synecresi suggests that synergy forge is occurring where social enterprises are crafting economic resilience within the markets through digitalization and value co-creation. Syncresi implies that the social entrepreneurs having digital collaboration are more resilient against the crises, thanks to agile work environments and due to economic market considerations. For example, during the COVID-19 pandemic, working from home with much more flexibility made it possible for many social entrepreneurs to start their side hustles or freelancing projects online both locally and globally, for thriving against the economic challenges and geopolitical crises.

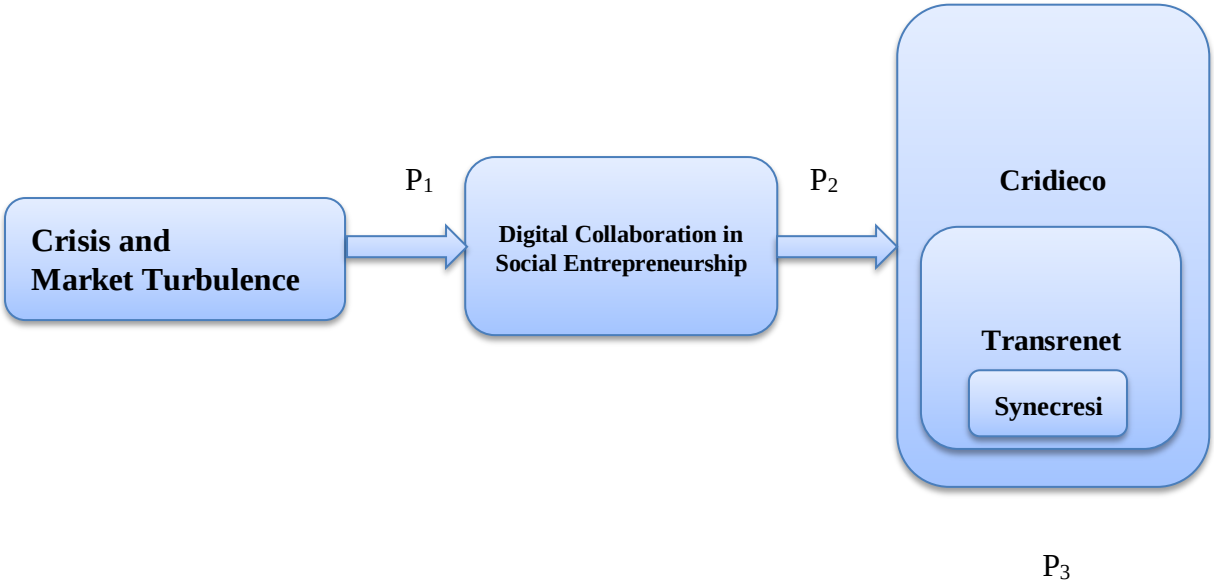

Fig. 2. Interconnected Resilience Framework depicting mechanisms connecting Market Turbulence and Social Entrepreneurship's Digital Collaboration.
Source: Own Research.

Overall, we have 3 propositions: **P_1: Crisis and Market turbulence increased Digital Collaboration in Social Entrepreneurship. P_2: Digital Collaboration in Social Entrepreneurship increased Resilience. P_3: There is interconnected connection between Cridieco, Transrenet and Syencresi.**

P_2: We reveal that social enterprises using digital collaboration can have more resilience against the crisis. Thus, our main research question of how market turbulence and crisis affect the way social enterprises employ digitalization for collaboration is answered with these three phenomena or respective newly identified concepts (Fig. 2): Crisis and Market Turbulence increased Social Entrepreneurship's Digital Collaboration (P_1) which resulted with increased Resilience (P_2).

P_3: Additionally, common feature of these three concepts as well as the main point of Interconnected Resilience Framework is that digital tools and collaborative practices enhance resilience of social and ecological enterprises in the face of adversity, crisis and market turbulence. Since social enterprises can rise from crisis through digital collaboration, we call crisis's impact on them as ***Phoenix Effect***: Crisis and market turbulence can cause changes in digitalization and value co-creation of social enterprises. In this regard, we explore Cridieco, Transrenet and Synecresi - fundamental theoretical mechanisms that connect digitalization and

value co-creation with each other for social enterprises within the context of crisis and market turbulence.

Simultaneously, analyzing these three phenomena reveals interesting peculiarities in social enterprises and how they gain more resilience over time, if they use digitalization and value co-creation during and after the crises (Table 3). Thanks to digital collaboration, we have 3 new concepts of Cridieco, Transrenet and Synecresi. These concepts underline the importance of using digital collaboration for social enterprises during crises, ultimately enhancing their resilience, network and overall ecosystem.

Table 3. Event-ordered Matrix for Crises' Impact on Social Enterprises. Adapted from Miles – Huberman (1994) and Frau et al. (2020).

Theoretical Concept	Time Period 1: 2015-2019 (Before the Crisis: Pre-COVID, Pre-War, Pre-Wildfires)	Time Period 2: 2020-2021 (During the Crisis: COVID-19, 2020 War, Wildfires)	Time Period 3: 2022-2025 (After the Crisis: Post-COVID, Post-War, Post-Wildfires)
Cridieco	Crisis-Resilient Digital Ecosystem may be existing only for traditional corporates and big companies which have the resources. While for social enterprises which are usually small and medium, Cridieco didn't exist.	With the arrival of several crises, there was an emerging need of Crisis-resilient digital ecosystem especially for social enterprises. Thus, Cridieco started to increase gradually.	Cridieco was empowered by digitalization & crisis-resilient entrepreneurial mindset which peaked in this period. Social enterprises in ecosystem showed resistance to crises' adversities.
Transrenet	Social enterprises and communities were loosely connected and didn't have many collaborations, which made them more vulnerable in front of the crises. Thus, Transrenet didn't have any existence in ecosystem.	The need for Transrenets and thus, for value co-creation among communities started to grow by increasing resilience in network, thanks to the agile work environments.	Social enterprises within Transrenets collaborated with each other, had knowledge transfer and better work-life balance for this time. After the crises, this tendency continued to grow steadily.
Synecresi	Synergistic economic resilience didn't exist for social and ecological enterprises or rather it existed but only in low levels, thus making enterprise more financially dependent and considerably in weaker positions.	Synergistic economic resilience started to increase gradually with more and more social enterprises adopting agile work practices and considering economic market situations.	Social entrepreneurs using digital collaboration and having agile work environments became more resilient to challenges posed by crises and other geopolitical market considerations.

- **4. 5 | Discussion of Findings in Study 3**

4. 5. 1 | Theoretical Contributions and Managerial Implications

To meet research aims and reveal the relationship between crisis and social enterprises' digital collaboration, longitudinal case study methodology is implemented. Thus, comprehensive analysis of 10 face-to-face in-depth interviews is conducted to address key research question of "How crisis and market turbulence affect the way social enterprises use digitalization for value co-creation?" and detailed coding process is created. This research extends previous studies in respective literatures by suggesting an Interconnected Resilience Framework (Fig. 2).

Social entrepreneurship is empowered by digitalization (Goyal et al. 2021; Wan – Liu 2021; Mursalzade et al. 2023), and value co-creation (Ratten 2022; Mursalzade et al. 2023), yet crises' impact on social enterprises' digital collaboration is underexplored and practically, there is still need for social enterprises to increase their digital collaborations to have more resilience against the crises. We revealed that research on the relationship between market turbulence and social entrepreneurship's digital collaboration is rare and disjointed in the literature. Thus, literature has failed in its purpose of synthesizing and providing guidance to practitioners on the implementation of digital collaboration during crises. Therefore, our research has identified new concepts making social entrepreneurship more resilient during crises if they use digital collaboration: Crisis-Resilient Digital Ecosystem, Transformative Resilient Network, and Synergistic Economic Resilience. Analyzing these three phenomena reveals how social enterprises gain more resilience over time by using digital collaboration during crises. Moreover, due to crisis and digital collaboration, we have new concepts of Cridieco, Transrenet and Synecresi which underline the necessity of digital collaboration usage in social entrepreneurship during crisis, ultimately empowering their resilience, network and overall ecosystem.

Our study contributes to social entrepreneurship literature by eliminating gap in specific research area, showing event-ordered matrix, and suggesting theoretical model. Interconnected Resilience Framework is the main theoretical contribution of this longitudinal study. The relationship between crisis and social enterprises' digital collaboration wasn't empirically researched before, thus Interconnected Resilience Framework depicting relationship between market turbulence and social entrepreneurship's digital collaboration resolves inconsistencies.

Crises happened in the past and they will also happen in the future. They are inevitable. However, social entrepreneurs must be ready for those crises. Phenomena of Cridieco, Transrenet and Synecresi highlight transformative potential of digitalization and value co-creation in social and ecological enterprises, highlighting importance of digital tools adoption and collaboration in addressing difficult social and ecological problems, especially if these endeavors are happening during the crises and market turbulence. By using digital collaboration during turbulent times, social enterprises can be more resilient against the adversities brought by the crises, and they can unlock opportunities for innovation, partnerships and contribution to the solutions of social and ecological problems our communities face.

4. 5. 2 | Limitations and Future Research

This longitudinal case study provides an opportunity to investigate how crisis and market turbulence affects social enterprises' digital collaboration. Nevertheless, the study also shows several limitations which should be addressed in the future. Our choice of methodology with longitudinal case study and data collection area of Azerbaijan limits generalizability of the results of this study. However, since newly identified concepts are about social entrepreneurship in general, it can be to other social enterprises too. Thus, we suggest extending research to other countries and social enterprises as well.

Additionally, as newly suggested phenomena, Cridieco, Transrenet and Synecresi can benefit from quantitative testing and validation with future research developing measurement scales and assess them rigorously. By validating these phenomena, researchers can support their theoretical base.

Current literature lacks much research about crisis and social enterprises' digital collaboration.

To bridge this gap between theoretical insights and practical realities, there is a demand for research agenda exploring above-mentioned concepts more. Additionally, since this longitudinal study only covered 10 years of social enterprises, research with longer periods can benefit the respective fields of literature. We could include to Crises only COVID-19 Pandemic, Karabakh War of 2020, Wildfires / Forest Fires of 2021, ongoing Legislative Barriers Crisis, and Intellectual Property Rights Crisis, nonetheless, we can suggest the exploration of other crises such as ongoing Ukraine-Russian war, Energy crises and their impact for social enterprises.

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5. Conclusion

This is an article-based doctoral dissertation consisting of systematic literature review and two qualitative studies: Study 1: Systematic Literature Review. "Digitalization and Value Co-Creation in the context of Social Entrepreneurship", Study 2: Multiple Case Studies. "Digital Social Entities, Valuable Communities: How Digitalization enables Value Co-creation" and Study 3: Longitudinal Case Studies. "How Crisis affects the way Social Enterprises employ Digitalization for Collaboration".

Table 2. Summary of Theoretical Contributions

Study	Methodology and Name	Theoretical Contributions
Study 1	Systematic Literature Review. "Digitalization and Value Co-Creation in the context of Social Entrepreneurship"	There is a positive relationship between Social Entrepreneurship, Digitalization and Value Co-Creation. There is lack of focus in literature for COVID-19's role. We provided Research Agenda with Research Questions for Future Scientific Research (Table 3 of Study 1).
Study 2	Multiple Case Studies. "Digital Social Entities, Valuable Communities: How Digitalization enables Value Co-creation"	Digitalization enables VCC for SE through the new phenomenon, which we call Data-driven Social Co-creation (DSC), and its subcategories Efficiency, Resource Mobilization, Feedback Loops and Data Utilization. We provided Digital Strategy Assessments on indicators to measure digitalization's impact.
Study 3	Longitudinal Case Studies. "How Crisis affects the way Social Enterprises employ Digitalization for Collaboration"	We created an Interconnected Resilience Framework depicting mechanisms connecting Crisis, Market Turbulence and Social Entrepreneurship's Digital Collaboration. We provided Event-ordered Matrix for Crises' Impact on Digitalization and Value Co-Creation of Social Enterprises.

Source: own compilation

Before explaining three studies' findings and theoretical contributions, we have to mention that based on the research agenda from Study 1 we started Study 2 where we attempt to understand the effects of digitalization and its correlation with value co-creation in social entrepreneurship. Therefore, we had an objective of connecting digitalization and value co-creation together for social entrepreneurship's development. Similarly, building on top of each other, after having multiple case studies, we are having longitudinal case studies. Since we already revealed the dynamics between our concepts in Study 2, later we build on it and investigate social enterprises digital collaboration in terms of crisis. In Study 3, our aim was to comprehend the effects of crisis and market turbulence from new perspectives with different social and ecological ideals. Thus, we continued Study 2 with Study 3 in a different way and connected crisis with social entrepreneurship's digital collaboration for analyzing changes in social enterprises over time: before, during and after the crises.

In Study 1, the aim was to conceptualize digitalization and value co-creation in the context of social entrepreneurship. In this research, social entrepreneurship, digitalization and value co-creation are related to each other. Resonating with the research objective, this study answers the following research question: **What underlying mechanisms tie digitalization, value co-creation and social entrepreneurship?** The methodology that we applied was a systematic literature review focusing on peer-reviewed international articles regarding social entrepreneurship, digitalization and value co-creation. The review process had three phases and followed the well-established guidelines of systematic literature reviews (Tranfield et al., 2003). A comprehensive review of 61 articles was conducted to address the research question.

Our research has identified that articles connecting 3 streams of literature is lacking. Our main research aim was to identify gaps in literature and connect 3 streams, and with this, we tried to contribute to literature. The first research gap is the connection between social entrepreneurship, digitalization and value co-creation. Our research has identified themes connecting three streams of literature that need improvement. Secondly, there is a deficiency in COVID-19 focus on articles about both digitalization and value co-creation in context of social entrepreneurship. Even though there are separate studies focusing on digitalization and social entrepreneurship in COVID-19 as well as value co-creation and social entrepreneurship in post-COVID-19 period, we think it's vital to investigate all 3 streams of literature together. Research found that literature on correlation between digitalization and value co-creation for social enterprises is scarce and disjointed. Literature on COVID-19 has largely failed in its

purpose of synthesizing and providing guidance to businesses and regulators on how to implement programs related to social entrepreneurship, value co-creation, and digitalization in post-COVID-19 period, which is surprising given the vast number of papers on these topics.

Study 1 contributed to current literature by suggesting two theoretical frameworks based on the gaps in the literature and suggesting a research agenda for future research. Framework depicting Positive Relationship between COVID-19, Digitalization, Value Co-Creation and Social Entrepreneurship (see Fig. 4) is one of theoretical contributions of this article. The relationship among these variables wasn't explicitly investigated before. The theoretical contribution of this academic research is the contribution that the research makes to the current body of knowledge on the literature streams of digitalization, value co-creation and social entrepreneurship. Additionally, also involving COVID-19 impact, this research adds to the overall understanding of the topic and tries to help gain a new perspective after the pandemic in terms of the existing literature and theory. The Framework depicting Positive Relationship between Value Co-Creation, Digitalization and Social Entrepreneurship (see Fig. 5 from Study 1) was the second theoretical contribution of this article. In this regard, this article helps to reveal a direct relationship between digitalization, value co-creation and social entrepreneurship and tries to resolve the inconsistencies in the literature. The main purpose these theoretical frameworks serve is that these suggestions are needed for further empirical testing.

Based on the Research Agenda from Study 1, we have started Study 2. In Study 2, the aim was to better understand the effects of digitalization and its correlation with value co-creation in social entrepreneurship. Therefore, we had an objective of connecting digitalization and value co-creation together for social entrepreneurship's development. By taking this research objective into consideration, we attempted to answer the following research question: **How does digitalization enable value co-creation for social entrepreneurship's development?** Applied methodology is a multiple case study. Thus, the process had the phases of conducting the interviews, transcribing, translating and editing them, and finally, qualitative analysis of them via NVivo software. To address the research problem, this study built on qualitative data from 11 interviews.

Our research has identified themes enabling digitalization for value co-creation in social entrepreneurship: Efficiency, Resource Mobilization, Feedback Loops, Data Utilization, or in one word – new phenomenon of Data-driven Social Co-creation. Study 2 revealed that the relationship between digitalization, value co-creation and social enterprises is disjointed and very scarce in literature and the research added up to the literature by eliminating the research gap, proposing a conceptual framework, and depicting the research agenda for future endeavors. DSC Framework showing mechanisms connecting Digital Transformation and Value Co-Creation for Social Entrepreneurship's improvement (Fig. 2) was a theoretical contribution of this article. The connection between digitalization and value co-creation for social entrepreneurship's development wasn't explicitly and empirically investigated before. DSC Framework resolved inconsistencies and contributed to existing knowledge base regarding digitalization, value co-creation and social entrepreneurship literature streams. Data-driven Social Co-creation – phenomenon where digitalization enables social entrepreneurs to leverage efficiency, resource mobilization, feedback loops and data utilization to efficiently, wisely and collaboratively create value with different interested parties, involves digital transformation to collect, analyze and interpret data from various sources, including customer feedback, market trends and social impact metrics.

In Data-driven Social Co-creation, social enterprises harness their stakeholders' power, identify innovation opportunities, and tailor their services or products accordingly. By integrating data-driven insights into their co-creation processes, social entrepreneurs can empower relevance, effectiveness and sustainability of their initiatives, ultimately driving positive social impact in their communities. This phenomenon highlights transformative potential of digitalization in social entrepreneurship, highlighting vitality of data-driven decision-making and collaboration in addressing complex social challenges. Through Data-driven Social Co-creation, social enterprises can unlock opportunities for innovation, partnership and positive change creating value extending far behind traditional business metrics. Lastly, to enhance discussion on indicators to measure digitalization's impact, we created a table for assessing the outcomes of digital strategies in tangible terms to provide practitioners with clearer guidelines on evaluating their initiatives.

In Study 3, the aim was to comprehend the effects of crisis and market turbulence from new perspectives with different social and ecological ideals. Thus, we have the aim of tying crisis with social entrepreneurship's digital collaboration and analyzing changes in social enterprises over time: before, during and after the crises. By highlighting this research aim,

we try to answer the following research question: **How does crisis affect the way social enterprises employ digitalization for collaboration?** Methodology of longitudinal case study had the phases of conducting the interviews, transcribing, translating, editing and analyzing them via NVivo software to create new theoretical concepts. Later, we used Event Ordered Matrix to explain the changes in social enterprises over time for 10 years: How were certain new theoretical concepts within 3 different time periods: before, during and after the crisis, based on 10 in-depth face-to-face interviews.

Our research has identified new concepts making social entrepreneurship more resilient during crises if they use digital collaboration: Crisis-Resilient Digital Ecosystem, Transformative Resilient Network, and Synergistic Economic Resilience. Analyzing these three phenomena reveals how social enterprises gain more resilience over time by using digital collaboration during crises. Moreover, due to crisis and digital collaboration, we have new concepts of Cridieco, Transrenet and Synecresi which underline the necessity of digital collaboration usage in social entrepreneurship during crisis, ultimately empowering their resilience, network and overall ecosystem.

Our study contributed to social entrepreneurship literature by eliminating gaps in specific research areas, showing event-ordered matrix, and suggesting theoretical model. Interconnected Resilience Framework is the main theoretical contribution of this longitudinal study. The relationship between crisis and social enterprises' digital collaboration wasn't empirically researched before, thus Interconnected Resilience Framework depicting relationship between market turbulence and social entrepreneurship's digital collaboration resolves inconsistencies.

At the same time, this thesis work and the studies involved in it had several limitations. Starting with "Digitalization and Value Co-Creation in the context of Social Entrepreneurship", we can mention that the Study 1 depicted few numbers of limitations that had to be addressed in the future research. Study 1 followed Systematic Literature Review which increased rigor of this study (Holzmann and Gregori, 2023). Nonetheless, this methodology also had disadvantages. Steps and phases that we had in a systematic literature review, as well as the choices that we made can be disputed, as the sample was highly dependent on the search string keywords of "social entrepreneurship" AND "digitalization", "social entrepreneurship" AND "value co-creation", "social entrepreneurship" AND "digital transformation", "digital" AND "social

enterprise", "social entrepreneur*" AND "value co-creation", "social entrepreneur*" AND "digit*", "eco entrepreneurship". To summarize, our sample of 257 potentially relevant articles depended on these keywords and the applied restrictions. Quality criteria may further exclude important research, and the sample was naturally restricted to the offer available, as 257 potentially relevant articles were selected from only two different databases of Scopus and Web of Science. Later on in the second phase of systematic literature review, we had selected 61 relevant articles with the several exclusion criteria. Excluding articles from comparatively lower quality journals such as Q3 and Q4 quartiles journals according to Scimago, can be another limitation, because this quality criteria may further exclude very important studies in Q3, Q4 journals. At the same time, excluding not-free articles due to financial reasons was also another limitation, even though the number of those articles were not very significantly high. However, the number of articles for the final analysis (61) is somewhat below the usual level for this methodology, because we aimed at a triple intersection of three streamlines of literature (social entrepreneurship, digitalization, value co-creation). It was another strong limitation for Study 1. Simultaneously, Study 1 conducted in 2022 and with the increasing trend (Holzmann and Gregori, 2023), it is possible that if we conduct that research now in 2025 and without triple intersection, the number can be higher.

Moreover, the guiding research question of "What underlying mechanisms tie digitalization and value co-creation together in the context of social entrepreneurship?" could be explored in a different way, such as multiple case studies with in-depth face-to-face interviews with social entrepreneurs, which could provide further insight into the relationship between digitalization, value co-creation and social entrepreneurship. To ensure a comprehensive review of this topic, it was essential for us to consider the limitations of this research and address them in future studies.

That is why, since there was a need for exploring the research question of Study 1 in a different way, we had new study of multiple case studies. "Digital Social Entities, Valuable Communities" provided a chance to explore how social enterprises can enhance their digital capabilities while co-creating value with their respective communities. From methodological point of view, Study 2 used a multiple-case study research design with the advantages to verify emergent findings and achieve larger generalization during theory building (Eisenhardt & Graebner, 2007). However, Study 2 had its own limitations as well. From methodological point of view, our reliance on the case study approach restricted the generalizability of the findings

from Study 2. Additionally, as a newly proposed theoretical model, Data-driven Social Co-creation Framework as well as Table of Digital Strategy Assessments could benefit from quantitative validation and testing. Future research could develop measurement scales for Data-driven Social Co-creation and Digital Strategy Assessments and validate instruments to assess their capabilities rigorously. Such endeavors would enable researchers to conduct explanatory research, test casual relationships and explore these topics across diverse organizational contexts. Additionally, further future research could dive deeply into the mechanisms and relationships within Data-driven Social Co-creation Framework to enhance theoretical understanding of this new concept. This could involve quantitative testing of propositions regarding interplay between different constructs such as efficiency, resource mobilization, feedback loops or data utilization. By validating the network of Data-driven Social Co-creation could empower its theoretical foundations and evaluate its predictive capacity.

The existing body of research on social entrepreneurship lacks applicability across diverse contexts and fails to sufficiently explore the interplay between digitalization, value co-creation and social entrepreneurship. To bridge this discrepancy between theoretical insights and practical realities, there is a pressing need for a research agenda delving into more related themes. Another recommendation for advancing research on correlation between digitalization, value co-creation and social entrepreneurship involves examining subject through lens of additional conventional marketing and business topics, such as market turbulence and crisis. Additionally, since our research didn't cover the digitalization's impact on value co-creation for social entrepreneurship during the crisis times other than COVID-19, we left it out, however, due to its great potential, we emphasized it as future research direction too, since there was also Karabakh, Ukraine war, energy crisis and other turbulences.

That is why, since there was a need for exploring digitalization's impact on value co-creation for social entrepreneurship during the crisis, we had new study of longitudinal case studies. And longitudinal case studies of Study 3 provided an opportunity to investigate how crisis and market turbulence affects social enterprises' digital collaboration in more thoroughly and professional manner. This method facilitated a thorough analysis of complex social phenomena and enhanced the generalizability of findings, as it permitted the replication of findings across cases, thereby supporting theory development (Eisenhardt and Graebner, 2007). Nonetheless, the research work which we called "The Phoenix Effect" also depicted a number of limitations. Choosing this methodology of longitudinal case studies and choosing only Azerbaijan for the

data collection area limited the generalizability of our findings. Nevertheless, since newly identified concepts are about social entrepreneurship in general, it can be relevant to other social enterprises as well. Therefore, we suggest extending research to other countries and social enterprises too. Moreover, as newly suggested phenomena, Crisis-resilient digital ecosystem, Transformative resilience network and Synergistic Economic Resilience can benefit from quantitative testing and validation with further research developing measurement scales and assess them rigorously to support their theoretical base.

Current literature lacks much research about crisis and social enterprises' digital collaboration. To bridge this gap between theoretical insights and practical realities, there is a demand for research agenda exploring above-mentioned concepts more. Moreover, since this longitudinal study only covered 10 years of social enterprises, research with longer periods can benefit the respective fields of literature. Since our respondents in the in-depth interviews mentioned COVID-19 Pandemic, Karabakh War in 2020, Wildfires in 2021, ongoing Legislative Barriers Crisis, and Intellectual Property Rights Crisis, we could only include these types of crises in our research. However, we can suggest the exploration of other crises such as ongoing Ukraine-Russian war, Energy crises, Cyberwarfare to highlight the Importance of Cybersecurity and Resilience Strategies for Digitalization, Consumer Behavior Shift to study how market turbulence influence customer behavior towards social and ecological enterprises with the role of digital marketing in shaping these perceptions, Policy and Regulatory Frameworks, Measurement of Social Impact, Cross-Sector Partnerships, Innovation in Social Service Delivery and their impact for social enterprises in our modern world. Resonating with these future research recommendations, we created a new Research Agenda exploring the intersection of Data-driven Social Co-creation, Crisis, Market Turbulence and Resilience. Comprehending these dynamics is important to conduct sustainable research and form sustainable theoretical models which can withstand crisis and market turbulence while creating social and economic value.

Table 3. Research Agenda exploring Data-driven Social Co-creation, Crisis and Resilience

Concepts in the Future Research	**Research Aim of the Future Research**	**Research Questions in the Future Research**
Ukraine-Russian war and Data-driven Social Co-creation	To explore the impact of geopolitical conflicts on social enterprises involving Ukrainian	How Ukraine-Russian war influenced Data-driven Social Co-creation in Europe, particularly regarding the dynamics of

	refugees as employees, examining how they adapt their strategies to leverage digital tools and foster collaboration in turbulent environments.	social enterprises' value co-creation and digitalization strategies in response to the migration crisis from employment perspective?
Ukraine-Russian war, Energy Crisis, and Ecological Entrepreneurship	To investigate effect of geopolitical conflicts on ecological enterprises focused on renewable energy solutions.	How has Ukraine-Russian war and Energy Crisis affected the dynamics of ecological entrepreneurship in the energy sector, particularly regarding value co-creation strategies?
Cyberwarfare, Cybersecurity, Resilience Strategies, Social Entrepreneurship's Digital Collaboration	To explore intersection of cybersecurity and social entrepreneurship, emphasizing the need for valid strategies to decrease risks associated with cyber attacks in a digitalized environment.	How does the threat of cyberwarfare influence the cybersecurity strategies and resilience planning of social enterprises that rely on digitalization and value co-creation during the crises?
Consumer Behavior Shift, Social Entrepreneurship	To research relationship between market turbulence, attitude towards branding (ATB), social and ecological enterprises with the role of digital marketing in shaping these perceptions.	How crisis and market turbulence influence customer behavior towards social and ecological enterprises with the role of digital marketing in shaping these perceptions?
Policy and Regulatory Frameworks	To study the relationship between digitalization of social entrepreneurship and regulatory frameworks.	How does digitalization influence the regulatory landscape for social enterprises? (Policy analysis and expert interviews with policymakers and social entrepreneurs for possible methodology)
Measurement of Social Impact	To develop framework for measure impact, followed by pilot testing.	What new metrics can be developed to assess the social impact of digitalized initiatives?
Cross-Sector Partnerships	To understand relationship between digitalization and cross-sector collaborations enhancing resilience, by studying successful cross- sector partnerships.	How do digital platforms facilitate cross-sector partnerships that empower resilience? What are the outcomes of such collaborations during crises?
Innovation in Social Service Delivery	To study social enterprises longitudinally to track service delivery changes over time.	What innovative service delivery models are emerging in social enterprises as a response to crises?

Crises happened in the past and they will also happen in the future. They are inevitable. However, social entrepreneurs must be ready for those crises. Phenomena of Crisis-resilient digital ecosystem, Transformative resilience networks and Synergistic economic resilience highlighted transformative potential of digitalization and value co-creation in social and ecological enterprises, importance of digital tools adoption and collaboration in addressing difficult social and ecological problems, especially if these endeavors are happening during the crises and market turbulence. By using digital collaboration during turbulent times, social enterprises can be more resilient against the adversities brought by the crises, and they can unlock opportunities for innovation, partnerships and contribution to the solutions of social and ecological problems our communities face.

This thesis work includes important information about the chosen topic, its importance, the scientific support required, background information, literature review and descriptions of the main models and techniques used in social businesses and decision-making processes. This thesis has opened up many further research areas and contributed to the already existing research of social entrepreneurship, digitalization, value co-creation, crisis and market turbulence. Social enterprises are becoming one of the driving forces behind the move towards social justice and with new enterprises, this trend will go on.

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Appendices

Appendix A. Interview protocol for Study 2

Thank you for making yourself available for this interview. My name is Hikmat Mursalzade, I am PhD Candidate – Junior Researcher working at the Corvinus University of Budapest in the Institute of Marketing and Communication. I am a member of the research group led by professor Dr. Tamara Keszey, vice-rector for research and Dr. Moreno Frau. We are working on a research about Social Entrepreneurship. The research is based on the case study method. Thus, data are collected through in-depth interviews with the social entrepreneurs and people working in social and ecological enterprises. That is why we need to talk with you and conduct this interview. The research results will be presented as an academic paper and submitted to a leading international journal in marketing, business, and management studies.

Before we start the interview, I would like to describe straightforwardly some of the key terms:

1. Digitalization which is defined as a rise in computers or digital technology usage by an organization, industry or country (Brennen & Kreiss, 2016).
2. Value co-creation which is defined as the joint creation of value by the enterprise and the customers, interacting and integrating their resources to co-construct better products and services to adjust to their needs (Prahalad & Ramaswamy, 2004).

General Questions:

1. Could you briefly introduce your company, its products or services, its customer portfolio or target group, and your primary responsibilities and tasks?
2. Could you please describe the process you follow for making sales? What is the main difficulty?
3. How do you ensure your sales comply with clients' expectations?
4. What supporting tools (e.g., software, application, website) do you use, and how do they work?

Digitalization-related questions:

5. What are the advantages and drawbacks of digital technologies for social entrepreneurship?
6. How digital technologies help integrate your tangible and intangible resources with your clients?
7. How digital technologies help the social interaction with you and your clients?

Digitalization and Value co-creation-related questions:

8. How can social enterprises use value co-creation to drive innovation?
9. What makes use of digital technologies special to cooperate with your clients?
10. How does digitalization facilitate the collaboration of managers and customers in social enterprises?
11. How can digitalization and value co-creation be deployed to improve social entrepreneurship?
12. How can digitalization and value co-creation be used to address social or ecological sustainability issues in social entrepreneurship?

Appendix B. Interview protocol for Study 3

Thank you for making yourself available for this interview. My name is Hikmat Mursalzade, I am PhD Candidate – Junior Researcher working at the Corvinus University of Budapest in the Institute of Marketing and Communication. I am a member of the research group led by Dr. Moreno Frau and Dr. Tamara Keszey. We are working on a research about Social Entrepreneurship. The research is based on *the longitudinal case study method*. Thus, data are collected through in-depth interviews with the social entrepreneurs and people working in social and ecological enterprises. That is why we contacted you to conduct this interview. The research results will be submitted as a PhD thesis to Corvinus University of Budapest.

Before we start the interview, I would like to describe straightforwardly some of the key terms:

Digitalization which is defined as a rise in computers or digital technology usage by an organization, industry or country (Brennen & Kreiss, 2016).

Value co-creation which is defined as the joint creation of value by the enterprise and the customers, interacting and integrating their resources to co-construct better products and services to adjust to their needs (Prahalad & Ramaswamy, 2004).

Crisis and Market Turbulence: Crisis is unwanted, unexpected, unpredictable situation, which cause disbelief and uncertainty (Milašinovic & Kešetovic, 2008). For example, a crisis can be COVID-19 pandemic or the war in Ukraine. Market turbulence is a state of volatility and uncertainty in the market, where prices and customers' needs fluctuate rapidly and unpredictably (Bakir et al., 2021). For example, after pandemic, the local economy in Azerbaijan also got affected heavily and prices increased immensely. Market turbulence is defined as "a change in the composition and preferences of buyers", a factor that is directly related to the level of competition (Kohli & Jaworski, 1990, p. 14). To assess this, Jaworski and Kohli (1993) developed a scale that initially included six items, later refined to five after testing: Customers' needs in industry change significantly over time; Customers are consistently seeking new products; There is demand for products and services from customers who have not previously sought them; New customers have different needs for products or services compared to past customers; Continuing to serve many of former customers today.

We also take this scale and definitions of turbulence during the preparation of interview protocol and conducting our research. There is limited research on crisis's impact on digital collaboration of social enterprises, that is why we decided to investigate how crisis and market turbulence can affect it.

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General Questions:

1. Could you please briefly introduce yourself?
2. Could you introduce your company and its products or services?
3. What is your role in the company and what responsibilities do you have?

Crisis Management Strategies:

4. Since you founded the social enterprise, what crisis situations happened affecting your company, and what patterns or trends have emerged over time?
5. How did you use digital tools to handle challenges during such tough times in your social enterprise?
    a. How was it before, and how was it after those certain events?
    b. Can you describe the evolution of digital tool usage in addressing challenges during periods of crisis within your social enterprise?
6. Over the course of your social enterprise's history, how digital tools changed you to work together with others to create value? Especially when things got rough in the market. For example, what websites, apps, or software did you rely on most to connect with others, keep your projects going when there was a crisis and how did it go?
7. Have you noticed any changes in how people interact and integrate resources during difficult times?
    a. Have there been noticeable shifts in the effectiveness of collaboration as a result of using digital tools?
8. What problems and disadvantages have you faced when trying to use digital tools for working together during a crisis, and how did you adapt or solve them over time?

Main Research Questions:

9. How market turbulence affects the way social enterprises employ digitalization for collaboration over time?
10. How do you know if using digital tools during tough times is actually helping your projects succeed? For example, do you measure the effectiveness of digitalization for collaboration during turbulence? How did it change over time?
11. What have you learned from the past? Can you share any tips or tricks for using digital tools to stay connected with others and keep your social or ecological projects going strong when things are uncertain and the market is unstable?
12. What do you think future holds for using digital tools to work and create value during difficult times?

Appendix C

Table 1. Coding and Data Analysis process of Study 2 (More detailed and elaborated another version of Table 2 from Study 2)

First Coding Stage		Second Coding Stage	Third Coding Stage
Open Codes	**Descriptive Codes**	**Interpretative Codes**	**Patterns**
"Digitalization and value co-creation's impact on social entrepreneurship is contributing to overall quality, saving time and costs. Other than easiness and high speed of work process, finance-related things such as easy sales, easy money transfer and easy means of purchasing can be mentioned" stated Nigar Muzaffarova. Sara Rajabli – founder of Buta Arts and Sweets social enterprise also talked about digitalization's positive aspects: "less time and energy is going". Likewise, Khatira Pashayeva – another social entrepreneur from ABAD which sells handcraft products made by rural people mentioned that they can deliver their products to the regions, and also to abroad, if there is a need to export. In this regard, digitalization makes it more accessible. Writing of accessibility, Mahammad Kekalov – founder of KekaMaps data-driven technology states digitalization and value co-creation's impact on improving accessibility issues for people with disabilities: "There is cost of having to meet people with disabilities. We communicate online. That's helped us save a lot of costs because when you work with people with disabilities and want to invite them to somewhere, you are obligated to pay for their transportation expenses because of all these inaccessibility issues, and that comes after cost." Similarly, Ismayil Asadov from Azerbaijan Cube Association which organizes Rubik's cube competitions stated that they are using digitalization to improve their performance: "It makes easier for us to announce and for clients to register to the competitions, also it makes easier for promoting our events and accessing a wide audience. It saves time, we group competitors in a second." It is easier for grouping many clients in advance. He also mentioned reaching more audience, growing faster in a cost-effective way. Furthermore, Ilgar Taghiyev – founder of Spendonate also mentioned reaching more users for less effort, for less money, for less investment: "Of course, you can do it in one day, be international organization. So, we can make cross-border donation as well." Spendonate is application, that is why, he mentioned "It helps us to talk, to involve more people. And operational expenses and risks within that coupon on old fashioned cashback system is much higher than using application." Gunay Rzazade – social entrepreneur from ethnic minority group, also promoting cultural heritage preservation states that more people know about them, since they are claiming their heritage, as a revitalization of local culture: "From the perspective of digitalization, more people know what is happening in the community, people who are very vulnerable and	Easiness	Efficiency	Data-driven Social Co-creation

sensitive to ethnic minority issues. We are promoting awareness, selling item online, you can do it easily. You fully commodify everything, commodify the sensitive issue."			
Gulsaba Yagublu – another social entrepreneur talks about reaching right target: "It's the fastest for reaching people, and maybe easiest way: you can really find the people who are really interested in this." She also uses the word "Snowball effect" for fast growth with digitalization. Moreover, Teresa Hamlin – founder of Azerbaijani Socks mentions that their website used to be only informational in the first years and then they made it more functional for online sales." Etibar Khidirov – founder of Destekchi ("Supporter") social enterprise similarly states website functionality: "The more digitalization we have, the more development and growth we have. More reach and more satisfied customers. So, digitalization may also bring customer satisfaction with it, since it is easier and faster. Enterprises can enter the market more easily or grow in relatively easier way." He adds omnichannel approach and reaching to many channels: "If it was used to be only offline channels, now, with the digitalization it also can be online channels with more reach. We reach our target groups via different channels including Linkedin, Instagram and Facebook. Every social media has its own people. For example, in order to reach more professionals and corporate people, Linkedin is the best. So, it is good for B2B, while Instagram can be good for B2C." He mentions that with value co-creation and digitalization, companies can offer many new products or services, there can be side products or services; With value co-creation, there can be more growth, fast entry to market, faster import and production.	Functionality		
Social entrepreneur Khatira Pashayeva talks about digitalization and value co-creation for crowdfunding, easy money transfer and financial transparency. She mentions that digital crowdfunding platforms such as Patreon, Kickstarter or local Tokhum ("Toxum") allow them to raise funds and engage a community of backers who share their vision and actively contribute to their success. Gulsaba Yagublu – social entrepreneur from Studio Fikomiks which creates ecological and social comics mentions crowdfunding briefly when she talks about easy payment options: "I would say easy delivery options are digitalized and have been faster, easier. There are a lot of payment options, application, you can just press a button, pay the amount, and get the product to your door. So, I would say it's a lot easier. Yeah, of course, there are other options. You know, crowdfunding and other payment options starting. There are a lot of options." Rahim Mammadli – social entrepreneur from Leyne which employs rural women and produce eco-friendly products from reeds, mentions that crowdfunding	Crowdfunding	Resource Mobilization	

and says that it is one of the value co-creation examples with the clients: “Because with the crowdfunding, they are just believing you that it's good product, it’s also good for testing your product and your idea. It means they are just giving, contributing some amount of money and because they believe, it will be good idea, it will be good product.” lgar Taghiyev – founder of Spendonate social fundraising platform mentions that digitalization is “simple, useful and good for all: anybody in the world can use, donate to one of social fundraising inside the application, or create his or her own social campaign.” So, what they do is fundraising for a cause and it is connected with crowdfunding: “We have human, animal, environment and organization categories for fundraising.” Later on, he mentions that digitalization is “normal way of e-commerce and in our case, the privacy is very clear as here. Yeah, by sitting at home without going anywhere, without going to any ATM or etcetera. So, this is a good, this is a privacy and good service for users, for fundraisers. Also, it's easy. It's very convenient to create those campaigns in our system.” He also states that they have 2 mobile applications, one for users and one for merchants: “So, if merchant is on site, he should use our app in order to recognize the client, it's very easy, you can recognize client, identify the client by reading QR. If you're online, you can use our application and users use their own unique number, and if you are e-commerce, in that case there is no need for application, just from merchant side, from user side you have to use application: In that case, you go to our application, find proper merchant and make all shopping online, and referral system is working there, so, the system understands that by whom it was referred to.” To conclude, trust and privacy is crucial part of crowdfunding and social fundraising.		
Founder of KekaLove Adaptive Fashion and KekaMaps social enterprises Kekalov states that crowdsourcing allows users to submit the data, create new value with submitted information with them as social enterprise or civil society and then with the government itself: “So, this is kind of a place, a bridge between the citizens, the governments and the authority. In that sense digital innovation are creating new values and bringing these two separate groups that wouldn't really come together to fix this problem. Basically, we don't come up with the designs on our own. We don't think by ourselves: What? Which kind of clothing	Crowdsourcing	

we need to design? Rather, it is the models who are going to be wearing the clothing on the stage that get to explain their needs and show us what kind of clothing that they would be much better with. Then they get to work with them to design specifically that what they need. that's another track of creating value together with customers." Etibar Khidirov, Gulsaba Yagublu and Khatira Pashayeva also talk about crowdsourcing mainly when it's been asked about value co-creation. Etibar Khidirov mentions it for widening the resources. He started his social entrepreneurship career with Tokhum Crowdfunding Platform, but with Destekchi, he wanted to have platform to share other resources than financial resources, including venue support, expertise support, networking. "And I knew that it would be online platform, otherwise it would not work. So, in that sense, digitalization is very special in our case. Also, crowdfunding is mainly from physical individuals and with the new enterprise I wanted to bring corporative companies together as well. So, I wanted to have crowdsourcing other than crowdfunding. Crowdfunding of financial resources is also important. For example, I even founded Destekchi with crowdfunding via Tokhum. But I wanted to widen the resources. If you are corporate, you are not using the office at the weekends and you can give your venue to social enterprises. Or another example is being trainer or mentor and sharing your expertise. Or if you are not expert, you can be volunteer. So, my point is that support is not only financial. And the reason why we started online was the ease of doing all these." Similarly, Khatira Pashayeva mentioned crowdsourcing of ideas from customers and volunteers: "Well, we use digital platforms to gather ideas and feedback from customers and volunteers. By involving diverse stakeholders, they identify new methods, introduce innovative techniques, and boost community participation." Moreover, several interviewees also mentioned trust issues for crowdsourcing too.				
Sara Rajabli who employs women with disabilities in her social enterprise starts her interview with building trustable long-term relationship, trust and reputation. She says that not applying feedback leads to loss of sales and customer trust. In this regard, proper feedback is vital, so, that's why she thinks it is important to firstly build trustful relationships in value co-creation. Speaking of feedback, she also adds comfort of anonym	Trust and Privacy			

feedback in the human interaction and trustful relationships: “Clients would feel more comfortable on thinking about the source and in most of cases we are making it anonymous.” Ilgar Taghiyev – owner of social fundraising platform Spendonate mentions that people have trust issues, that is why, they are checking on reputation and quite clear background. “With face-to-face and tangible meetings, you always give some kind of trust. But again, it's about generation. If it's a younger generation, they understand.” Rahim Mammadli also mentions trust in the payment on arrival and says that they’re trusting their customers. Customers also should feel trust in order to engage with social enterprise and regarding this, Rahim adds negative yet honest feedback and trust within the social interaction. He himself also have trust issues and that is why, pays attention to other people’s reviews during online shopping. He says “Trust is the main issue,” and concludes with the importance of trustable experiential engagement with active listening on the basis of feedback.		
Co-founder of Studio Fikomiks - Nigar Muzaffarova mentions cooperating with focus groups for feedback and needs assessment. Another entrepreneur Sara Rajabli also talks about feedback-based product or service development. Previously they did not have minimalistic and vegan products, but then they had to include these to their menus: “So, based on this feedback from our customers, it also changed our stereotypes about product design. More feedback you get, you understand actually that of course you can have some trends in local market, but you can also change some perspectives about your products as well.” Later on she adds data analytics and online surveys in order to get feedback from corporate customers: “So, digitalization’s main unique point and value for us is an opportunity to get reactions from and interact with all possible stakeholders.” Other than instant immediate feedback, constant and proper feedback also have been stated. According to her, constant feedback is good for testing, experimenting, and continuously adjusting to the needs of different stakeholders, whether it's U.S. Embassy or someone else and satisfying their needs by accepting the reality after testing with focus group or with their clients. She also mentioned that some of the clients don't give proper feedback. Rahim Mammadli – co-founder of Leyne social enterprise talked about feedback honesty as well. Leyne tries to solve social aspects, increase women	Feedback	Feedback Loops

empowerment and stop cultural loss by selling eco-friendly reed products. Their clients are also trying to promote them, take the products to everywhere, and share. Rahim thinks this is also co-creation of value. Rahim's enterprise is helping the rural worker women for their financial needs. "If women are financially independent, then they can leave or they can divorce if things go wrong." Financial dependence is part of domestic violence. "If you have a constant salary, or if you have some skills to do something, some products and make money, then you can divorce. So, I believe that for those reasons, people are also making collaboration with us, help us, trying to give real feedback to improve our products." Ismayil Asadov mentioned gathering feedback for customer expectations and value co-creation. He stated the importance of open communication, needs assessment with focus group. "Well, our competitions are mainly based on the value co-creation." Because in the service that they provide clients are crucial part of the service, they are also serving and creating value together. In this regard, feedback is essential. Knowledge management in managerial level, collaboration of managers and collaboration with customers are also related things and mentioned by Asadov for feedback and addressing client needs. Gulsaba Yagublu also mentions feedback for focus group and for keeping up with the clients' expectations. "Digitalization also provides statistical numbers or statistical feedback in numbers," – she adds. Similarly, Teresa Hamlin mentions these statistics, and adds active listening, feedback-based improvement, managing the negative feedback or dealing with negative electronic word of mouth. Etibar Khidirov doesn't deny feedback importance either, and Gunay Rzazade mentions that feedback for quality assurance: "Client satisfaction and this is very important, because we do believe the power of mouth-to-mouth marketing, and we do believe that happiness of client brings more people." Later on, she concludes that since they fully depend on the feedback of clients, and see which items got attention, got more orders, they are basically shaping all other items like this accordingly. "Because we have to somehow as you mentioned, earn some money, make profits, generate profits, revenue. And the values that our customers bring to working process, this is undeniably huge. I mean because of their feedback, of their commands, they are shaping even our video content." Teresa Hamlin also has similar approach: "Balance of			

keeping our roots, of making the traditional socks, but also taking people's own needs, orders. This is more sustainable to continue.”			
“People need skills and knowledge to use technology to create something digitally and do the marketing because it is generally very competitive”, mentioned Nigar Muzaffarova. “How to actively use, promote, sell something… You know, it was hard for workers to promote, since rural regions have lower internet speed, tech adoption and elderly women in those regions have lower digital skills to commodify their products and culture online. It is to keep the competition in the digitalization, because we always have to keep on proving our digital skills. Nowadays many companies offer high tech and everything with the one click. So, it's also hard to be in the competition here.” Mentions Rahim Mammadli. “Leveraging data analytics tools, social entrepreneurs can analyze trends, measure impact, and make data-driven decisions to improve their initiatives' effectiveness” mentions Khatira Pashayeva, “In this social enterprise we are collecting data for better and accessible buildings for people with disabilities” states Mahammad Kekalov.	Data Analytics	Data Utilization	

Appendix D

Table 2. Coding and Data Analysis process of Study 3 (More detailed and elaborated another version of Table 2 from Study 3)

First Coding Stage		Second Coding Stage	Third Coding Stage
Open Codes	**Descriptive Codes**	**Interpretative Codes**	**Patterns**
Q1: "COVID gave us opportunity to digitalize… But it wasn't enough, we also had problem with mindset of our local people. There's one project - website and in the other part there's one donor, donor doesn't believe that: "What is this website? I will pay through this; the money will arrive to the account or the idea owners? Why should I spread my idea with others? What if someone takes it and uses it?" So, lack of entrepreneurial mindset and cultural barrier in local community, especially when it comes to mistrust." (Case 1).	Cultural Mindset		
Q3: "People prefer to work under someone's orders. To initiate something independently, to correspond, to take responsibility, to make something is hard, even though they would see it more profitable than to wait someone's order." (Case 3).	Entrepreneurial Initiative	Crisis-responsive Entrepreneurial Mindset	
Q4: "Crisis can impact the social enterprises a lot. Social businesses are changing their mindsets and approaches slowly and react to tough times. So, we need to be innovative, use more digital tools and data analytics to stimulate operational processes. Digitalization helped a lot in our work during crisis, and it can also help others to be more resilient towards the crisis." (Case 5).	Crisis-driven Adaptation		Crisis-Resilient Digital Ecosystem
Q2: "Overall, the integration of digital tools has transformed the dynamics of collaboration within our social enterprises. It made things more efficient, particularly during difficult	Digital Tools Adoption	Digital Transformation	

times. These changes made us to navigate challenges more effectively and continue driving positive impact in our mission to create meaningful social and ecological change." (Case 2).			
Q4: "We need to be innovative, use more digital tools and data analytics to stimulate operational processes" (Case 5).	Advanced Data Analytics		
Q5: "During war we had a lot of social fundraising. Overall, people got affected by both development of technology and people's mind and approach. So, people are just trying to switch traditional charity to more technological one, which is more convenient, secure and easy… A crisis gives problems and, in our case, good chance: People start caring about other people by giving more charity, by becoming kinder to each other. Thus, it makes a situation better overall." (Case 8).	Inclusive Efforts	Value Co-Creation within Community	
Q6: "During COVID-19, social enterprises quickly adapted to more advanced digital tools such as video conferencing for remote work or social media for outreach and fundraising, and online project management tools for better coordination. So, this evolution enabled them to stay connected, continued their mission and growth despite the challenge they faced." (Case 10).	Community Engagement		
Q7: "The evolution of digital tools influenced how we collaborate with others to create value within our social enterprises. For example, we started to have Focus group for proof-reading from youngsters before publication, increasingly relied on online platforms, such as project management software, collaborative document sharing tools, and communication apps, to facilitate teamwork and coordination." (Case 2).	Feedback Mechanisms		

Q8: “We have remote work tradition kept from COVID-19. And collaboration is also enhanced including virtual meetings, training sessions and design collaboration. The skills have been enhanced and adopted to the new reality. Due to this COVID-19 issue, flexible work models also developed which you have find very useful and there is no need to come every day from 9 to 5 work in case you don't have any urgent tasks to complete.” (Case 3). Q11: “We saw that such crisis can happen. We must be ready, every other company can face, it's important to stay proactive, stay agile and stay flexible” (Case 7).	Flexible Work Models	Agile Work Environments	Transformative Resilience Networks
Q9: “COVID also raised the issues regarding physical health, but also mental health, life-work balance. It was a digital collaboration: You didn't see the people, but still you worked together, and it was a collaborative effort - more flexible, very easier. That's when people realized that it was possible to have flexible jobs, more task oriented, way less time-consuming jobs. And it would allow them to have more free time for themselves.” (Case 4).	Innovative Collaboration		
Q12: “Collaborating with other brands helped us to be more effective. Especially during the war. Even the diaspora got really excited about helping Azerbaijani brands. We connected with other brands with live streams. Since then, I've became more active on social media, where before I was just posting occasionally like “this is a sock”. So, this taught me the value of community and using these digital things for that. I learned through COVID and war, that it's important to stay connected with our customers by telling the stories of the	Economic Resilience		

women and making sure that's one of the front parts of our company." (Case 9).		Economic and Market Considerations	Synergistic Economic Resilience
Q14: "COVID caused lots of layoffs, crisis in the economy. And then because of this, remote work or working from home emerged. People realized that some of the things back then weren't necessary, and now they could do many things online. Well, maybe some didn't rely on online payment or maybe some didn't have the digital skills to do so, but overall, their digital skills increased, side hustles such as drop shipping, affiliate marketing increased, and at the same time within the business environment, the IT became more task-oriented and focus on AI raised." (Case 4). Q15: With agility, companies can offer many new side products or services, there can be more growth, fast entry to market, faster import and production." (Case 5). Q17: "We've learned to sell things digitally, create patterns of our socks. So, it's like an actual digital download that you buy: some women could sit at home working in America and Europe. It's a certain knitting pattern - digital items that have helped passive income: we've made cards and stickers like with a sock on them. And with Azerbaijan on it, so, it's like something kind of related. But it's also like a way that we're using digital things to support our business." (Case 9).	Side Hustles, Freelancing		
Q16: "After the pandemic, we had war and post-conflict stress. Everyone was worried because we are in hot pot between Russia and Iran. So, geopolitics of crisis also impacting… People used digital tools to learn trading in the cryptocurrencies, digital trading methods like drop shipping. The people started to investigate this drop shipping, and they	Geopolitical Crises' Impact		

started to sell online. Basically, you buy products from China, and you open your account in the Shopify, sell in USA because in China it's cheaper while you don't have a warehouse, but just website" (Case 7).			

List of Publications

Keszey, T., Molnár, L., & Mursalzade, H. (2023). Factors affecting customer information quality perception: The role of trust, organizational fluctuations, and market turbulence. *Vezetéstudomány Budapest Management Review*, *54*(12), 14–23. https://doi.org/10.14267/VEZTUD.2023.12.02

Mursalzade, H., Molnár, L., & Saraswati, H. S. (2023). Digitalization and value co-creation in the context of social entrepreneurship. *Vezetéstudomány Budapest Management Review*, *54*(11), 2–14. https://doi.org/10.14267/VEZTUD.2023.11.01

Mursalzade, H. (2024). Digital social entities, valuable communities: How digitalization enables value co-creation for social enterprises. *Society and Economy*, *46*(4), 423-440. https://doi.org/10.1556/204.2024.00015

Mursalzade, H. (2025). Phoenix Effect: How Crisis affects the way Social Enterprises employ Digitalization for Collaboration. Submitted to *Vezetéstudomány Budapest Management Review* on the 29th of November.