A conceptual model to assess and develop digitalisation in the social economy's people care sector: the case of Prato (Italy), Mataro (Spain) and Varaždin (Croatia)

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Abstract. *This paper aims to provide researchers and policymakers with a model to assess and develop digitalisation in the social economy's people care sector. The model consists of internal and external factors. After the model had been theoretically conceptualised, it was evaluated using the survey that included 58 organisations: 49 participated in the questionnaire, and nine were visited and interviewed. The organisations came from Prato (Italy), Mataro (Spain), and Varaždin (Croatia). In all three, there are good examples regarding digitalisation, and also examples of organisations still in the beginning phase of considering digitalisation. Interview results confirmed this. Additionally, the authors presented digital tools used in the field and gave some recommendations as a starting point to foster the digitalisation process in social organisations dedicated to personal care services.*

Keywords. social economy; digitalization; people care

1 Introduction

We are currently navigating through what is termed "The Fourth Industrial Revolution," a period distinguished by the rapid pace of change and its far-reaching impacts. According to Schwab (2017), this era is characterised by two principal factors: Velocity, as the global landscape is increasingly interconnected, leading to accelerated transformations; Convergence of Spheres, as there is a growing blur between technological, physical, and biological realms, influencing how individuals live, work, and the structuring of societies. Both the European Commission (EC) and the Organisation for Economic Co-operation and Development (OECD) prioritise digital transformation on their political agendas. The EC emphasises the merging of technologies and the amalgamation of physical and digital systems to foster innovation environments within Europe. Conversely, the OECD highlights the synergy between data and technology as pivotal for societal transformation. In the realms of economics and business, the COVID-19 pandemic has expedited the digital transformation process, condensing years of change into mere months. The resilience of economic activities during this crisis has been notably higher in sectors with advanced digital integration. The "Recovery Plan for Europe," proposed by the EC, underscores the significance of digitalisation within the business sector. In response to the economic and social repercussions of the pandemic, the EC has introduced a series of measures focused on economic restoration. These include strategies aimed at equitable climate and digital transitions, facilitated through the Just Transition Fund and the Digital Europe Programme. These initiatives ensure that transitions toward climate neutrality, digitalisation, and demographic shifts are equitable, supporting the success of the European Green Deal and the 2030 Digital Decade for all Europeans.

In this research, the people care sector refers to industries, services, and sectors that focus on the well-being, support, and care of individuals, particularly those in need of assistance due to age, illness, disability, or other personal circumstances. It encompasses a broad range of services designed to ensure people's physical, emotional, social, and mental well-being. These services include health care, social care, elderly care, disability support, mental health services, child care and personal care. The sector of

people care is not immune to the imperatives of digitalisation. It faces the challenge of adapting to new operational and relational dynamics. Within this context, the people care ecosystem must identify tailored digital solutions to navigate its transition, adhering to principles of inclusivity and equality. Digital Missions for Care Social Economy's Resilience (DIMCARE) is a project financed by the European Union to catalyse digitalisation within the social economy's people care sector. It advocates for adopting new technologies and digital social innovations, recognising the sector's unique digitisation challenges due to its reliance on on-site services. DIMCARE promotes the integration of digital tools into core service activities, highlighting the role of EU-supported local and regional administrations in facilitating this transition.

This paper aims to offer research and policy-making bodies a framework for evaluating digitalisation within social economy organisations in the people care sector, fostering the development of digitalisation initiatives. It aspires to be a benchmark for promoting digital transformation within organisations or industry sectors. By providing insights into the implementation of digitalisation across different European territories, the study aims to enhance understanding and facilitate the efficient adaptation of organisations to digital imperatives. Additionally, it seeks to lay the groundwork for transnational and inter-regional collaboration among social economy stakeholders. Related to digital maturity, this concept in the people care sector refers to the extent to which organizations have integrated digital technologies, data-driven decision-making, and digital processes into their operations to enhance care delivery, improve efficiency, and meet the evolving needs of individuals they serve.

There are three research goals in this paper:

1. To introduce and evaluate the model of digital maturity of people care sector organisations,
2. To define and evaluate the levels of digital maturity inside social organisations in the people care sector,
3. To present the digital tools that are used in people care sector.

This paper is organised as follows: Section 2 presents a literature review on digitalisation in the people care sector. Section 3 presents digitalisation in people care sector in three countries. Section 4 presents the methodology of the research. Section 4 presents the proposed model to assess digitalisation in the social economy. Section 5 presents the results. Finally, Section 6 concludes the paper and gives recommendations to foster the process of digitalisation.

2 Assessing digitalisation

Despite the recognised importance of digital transformation within economic organisations, there is a noticeable dearth of studies proposing models to evaluate digital maturity in these entities. This gap is even more pronounced when focusing on organisations within the social economy, where existing literature is limited and often originates from professional rather than academic circles. The available studies tend to adopt a qualitative approach, rather than a quantitative one (Roman and Rusu, 2022), and are sometimes managed by social organisations interested in the development of the social economy within their contexts. (Taula del Tercer Sector, 2024, Scottish Council for Voluntary Organisations, 2024) A segment of academic research links the digitalisation process directly to digital innovation initiatives (Khin and Ho, 2019).

To advance the process of digital innovation, organisations must commit to embracing emerging technologies (Khin and Ho, 2019). It is beneficial for firms to initially outline potential applications of digital technologies and the value they can add (Sjodin et al., 2018). However, digital components are sometimes integrated without a thorough understanding of customer needs or a unique value proposition Gebauer et al., 2005). The digitalisation process within an organisation should be considered holistically, encompassing both back and front office operations, and taking into account both internal resources and external factors, including political variables. Collaboration both within and outside the organisation is crucial. The digitalisation process generates value through collaboration among various stakeholders within the ecosystem. As highlighted by Parida (Parida et al., 2019), often, the realisation of digital value creation extends beyond a firm's boundaries, involving collaborative efforts across networks (Ehret and Wirtz, 2016; Hakanen and Rajala, 2018; Loebbecke and Picot, 2015). To analyse the level of digitalisation in a one sector, therefore, it is vital to consider the influence of external and internal factors that encourage digitalisation.

Regarding external factors, it is necessary to consider two variables:

- the support from public administrations and the importance that organisations that operate inside the sector give to the process. The support from governments to promote digitalisation within organisations can lead to a favourable environment for implementing digital processes and reinforce positive attitudes towards digitalisation; effectively, as a consequence of COVID 19, a lot of European countries promoted policies to foster the process of digitalisation inside organisations. One example of these programmes was the programme: Next Generation EU.
- the second external factor that must be taken is the support of the sector where organisation develop their activity. Inspired by the Theory of Planned Behaviour (Ajzen, 1991) we consider that Relational Support plays an important role in the process of digitalisation. This concept refers to

support for introducing and developing the process of digitalisation from the whole of organisations that belong to a sector, which can exert pressure to adopt such practices.

The definition of internal factors that influence the development of the process of digitalisation is more complex. Reviewing the academic literature, we conclude that concepts such as digital orientation and digital capability are important. A strong technological orientation is essential. Gatignon et al. (1997) defined technological orientation as a firm's dedication to applying new technology and being responsive to technological changes. According to Khin and Ho (2019), alongside the importance of a digital technology orientation, a firm must also possess the capability to manage and optimise the use of digital technology efficiently.

Thus, enhancing an organisation's digitalisation process requires it to have the digital capability to utilise digital technology effectively. Grant (1996) and Ritter and Pedersen (2019) suggest that an organisation is capable if it can perform a productive task repeatedly, directly or indirectly contributing to its capacity for creating value by transforming inputs into outputs.

When applied to digital capacity, this concept emphasises focusing on digital skills. These skills range from basic competencies essential for functioning in the current economic environment to more advanced abilities for working with data generated through digitalisation. This includes the capability to use communication tools, business process support tools, and platforms for website creation. Moreover, employees must possess skills for storing and analysing data, as well as the permissions for its use. Data management involves not only its generation, storage, and analysis but also sharing it with other organisations within the sector. Therefore, digitalisation, value creation, and collaboration should be considered beyond the boundaries of individual firms, especially in SMEs. Knowledge creation, development, transfer, and exchange inside the ecosystem are operated among economic agents and non-economic parties, such as technology, institutions, sociological interactions, and culture (Liu et al, 2022).

Additionally, under the project DIMCARE, an instrument to measure the digital level of social economy organisations was developed by Kadoić et al (2024). This instrument is mainly focused on internal factors and is used at the level of individual organisations in the people care sector while the external factors are only implicitly included.

Since the development of the digitalisation of the organisation in the people care sector, a certain geographical area is not a matter of the individual organisation and is not only influenced by internal factors; there is a need to develop a more comprehensive model that will include external factors and be used at the level of all organisations that are active in different geographical locations.

3 The digitalisation in people care sector in Prato, Mataro and Varaždin

The theoretical model proposed in this paper and the questionnaire used to validate it were the result of a qualitative field analysis of digitalisation in the people sector in three countries: Croatia, Italy and Spain. Here we describe the state in three cities and countries regarding the digitalisation in people care sector.

1. Croatia: Even, currently the term of social entities (associated with people care sector) in Croatia is still a blur, Croatia embedded the notion of solidarity a long time ago. Its strong legacy has nourished the development of new forms of economic cooperation promoting solidarity and mutual self-help. The Croatian legal systems, although not conceived for social enterprises, the existing legislation allows for a certain degree of flexibility to identify the following legal forms adopted by social enterprises in Croatia: Associations, Social Co-operatives, Private Limited Liability Companies. The legislation related to social entities is still a big challenge in Croatia. There is no systematic tracking of the application of the digital transformation paradigm in any sector as a whole, nor tracking of digital transformation in social entities (the term “social entities” by its definition is still unclear). However, there is some partial research in this manner, related to specific types of institutions. The first example is related to some research that focuses on the digital maturity of higher education institutions. The second example is related to the Croatian company Apsolon, which created the HDI (cro. *Hrvatski digitalni indeks*, eng. Croatian Digital Index). Both of those studies resulted in the instrument for measuring digital maturity level, but for different purposes: the first for higher education institutions, and the second for business organisations.
2. Italy: Italy has a long-lasting tradition in social economy (which mathes the term people care sector). The first organisations date back to the Middle Ages, namely the catholic brotherhoods, the “Misericordie” in Florence in 1244, and the “Monti di Pietà” set up by Franciscan friars in 1462 in Turin, which provided credit to people in need. The social economy sector in Italy, is vibrant and diverse, encompassing a range of organisations, such as cooperatives, mutuals, and non-profit organisations. These organisations provide essential services and support to the local community, including employment opportunities, training, and access to affordable goods and services. In Italy, according to the report “Digital transformation: Shaping the future of European Healthcare” (Deloitte Center for Helth Solutions, 2020), 6% of respondents at the Italian level

declared that their organisation has increased the use of digital technologies to support the work of health professionals following the COVID-19 emergency.

3. Spain: Social Economy is considered in Spain an economic sector of great relevance since it represents 10% of the Spanish GDP and it represents 12,5% of total Spanish employment. 64% of the social economies that develop their activity in the people care sector have a level of income lower than 2 million euros. 22,8% have a level of income bigger than 50 million euros. A study carried out by the Mataró Council (2022) about the level of digitalisation in the companies that develop their activity in the territory concluded that 75% of the companies know about "Digital Transformation", but only 55% of companies affirm that they have a Digital strategy. 75% of those companies consider that the digital strategy implies profit for the companies, the other 25% have not obtained results yet. The Board of Entities of the Third Social Sector carried out a study on digitalisation in social organisations (Taula del Tercer Sector, 2024). This study analyses the level of digitalisation in the third social sector in Catalonia. The conclusions of this study are that there are a lot of things to do if we are speaking about digitalisation and the people care sector. In Catalonia 62% of the entities have an intermediate level of digital maturity, which means that they are entities that are beginning to formalise a digital plan in some specific area. Most of them act only when it is necessary. They have a reactive strategy. It is very difficult for entities to make decisions according to the data obtained thanks to the process of digitalisation.

The state in the area of digitalisation of the people care sector in three countries shows big differences in the development of the people care sector, but also in the digitalisation of the people care sector. This variability enabled a comprehensive view of the overall state of the people care sector in the EU.

4 Methodology

The methodology developed for assessing and fostering digitalisation in the social economy's people care sector within the DIMCARE project follows a structured approach, incorporating insights from the categorisation of digital maturity levels developed by the Board of Entities of the Social Third Sector of Catalonia (2024) and the literature revision This methodological framework guides the selection of organisations and the design of the questionnaire to comprehensively evaluate digitalisation efforts within the sector.

This research is an example of the mixed research type since it combines qualitative and quantitative aspects. The research has been implemented on different organisations in the people care sector in Prato, Mataro and Varaždin. The methodology developed is multifaceted, incorporating both qualitative and quantitative approaches to capture a comprehensive understanding of the digital maturity levels of the organisations participating in the study. The mixed research design is used. The selection criteria for participating organisations were informed by the guidelines provided by Creswell and Creswell (2017) for qualitative and quantitative research design.

Quantitative research: conducting a survey related to digitalisation in the people care sector using a questionnaire. The quantitative aspect of the research utilised an online questionnaire distributed to a selected group of social organisations dedicated to the people care sector across the three territories. Local and regional authorities identified relevant and representative social organisations within their respective territories that aligned with the project's scope. The total number of organisations that have received the questionnaire was 83. The questionnaire design was informed by established practices in survey research (Regmi et al, 2016). The survey questions covered various aspects related to digitalisation in the people care sector, including the organisation's starting point on digitalisation, the attitude of staff towards digitalisation, sector-wide perspectives on digitalisation, and barriers and challenges faced. The questionnaire, disseminated via Google Forms, consists of 31 questions. The questionnaire was completed by a total of 49 social organisations (response rate is 59%), with 26 from Mataró, 12 from Varaždin, and 11 from Prato (Fig. 1). The research sample to which the survey was a full sample – the questionnaire was sent to all the organisations in the people care sector in those three geographical locations. Based on the conceptual framework, we provided a model to evaluate digital maturity. The results of the questionnaire were used in (1) providing and validating the model to assess and develop digitalisation in the social economy's people care sector and (2) defining the levels of digital maturity inside social organisations in the people care sector.

Qualitative research: study visits to the selected organisations in the area of people care sector in Prato, Mataro and Varaždin. A total of 3 social organisations were visited in Mataró, 2 in Varaždin, and 4 in Prato. The organisations were selected for visits based on importance and influence in their local environment, their responses on the quantitative survey and their availability to visit them at the particular moment, considering the project schedule. A semi-structured interview format was employed to allow for flexibility and depth in exploring the digitalisation efforts, challenges, and attitudes prevalent within the social organisations in each territory (Knott et al, 2022). The results of the qualitative research were used to polish the results of the quantitative results and to finalise the model to access and develop digital maturity in the

organisations in the people sector. Furthermore, study visits served as a tool to evaluate and update the descriptions of organisations in the people care sector that apply different levels of digital maturity considering different criteria.

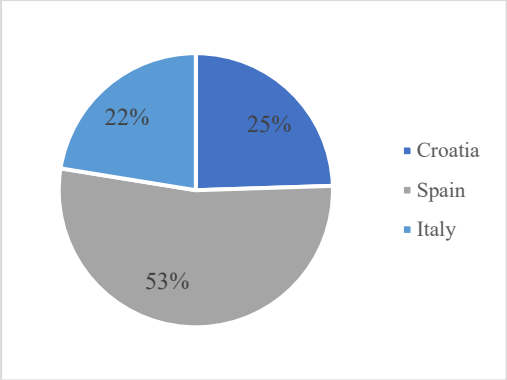

Figure 1. The number of survey participants (N=49)

The qualitative aspect of the research involved site visits and in-depth semi-structured interviews conducted in the three territories: Mataró, Varaždin, and Prato. This approach allowed for an initial exploration of the importance of digital transformation within social organisations operating in these regions.

5 The results

5.1 The model of digital maturity of people care sector organisations

After the questionnaire and study visits were implemented, it was possible to establish a model for the digital maturity of organisations. One of the tasks during the methodology development was to elaborate a model that considers both internal and external factors. To propose a model, we analysed the obtained data, formed an initial model, and further, through focus groups and deep analysis, updated the initial model. This model is depicted in Fig. 2.

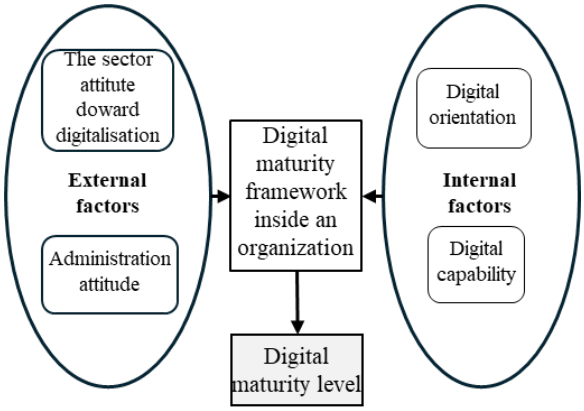

Figure 2. The model used in the DIMCARE project.

The model proposed has four dimensions: two internal, Digital Orientation and Digital Capability, and two external, sector attitudes toward digitalisation and Administration Attitudes. For evaluating the four dimensions we have identified the variables:

1. Implementation of the process of digitalisation in the front office and in the back office
2. The level of budget focused on digitalisation. Organisations with a strong digital orientation will devote more resources to digital transformation than those that do not.
3. Areas of organisation where the digitalisation process is implemented. Organisations with a high degree of Digital Orientation will implement digital transformation in more areas.
4. There is a department or a specific person in charge. An organisation with a person or department in charge of digitalisation demonstrates a greater digital orientation than organisations without it.
5. Digital capability is related to digital skills. Employees with positive attitudes toward digitalisation are more likely to have digital skills or to be interested in training them.
6. The sector attitudes. It is important the organisations that develop their activity inside the sector consider the process of digitalisation as a priority. In this way, the digitalisation process will be more efficient since organisations can share infrastructure, solutions or even share data that is produced as a consequence of the activity carried out. Administration attitudes toward digitalisation. If public administrations are aware of the importance of the process of digitalisation, they will promote different programmes with the aim of increasing the level of digitalisation inside organisations. All of those dimensions are influenced by the specific characteristics of entities that belong to the sector, like size defined by the number of employees and the amount of income, the average age of employees and the legal structure, among others.

The variables used to measure internal and external factors have been established according to the existing literature, to which we have referred in Section 2.

According to the existing literature, the support of public administrations is essential in promoting the digitalisation process in organisations; the Next Generation EU programme is proof of this. The attitude of the sector is another of the external factors that most influence the digitalisation process. Social organisations that develop their activity in the people care sector are characterised by being small in size and having few resources. For this reason, the digitalisation process in an organisation will hardly occur if there are no synergies/collaboration between the different organisations within the sector. This is why the attitude of the sector has been used as one of the variables to measure external factors.

The variables that define the internal factors have been defined according to the contributions made by Gatignon et al (1997) when they define the concept of technological orientation (identified by us as technological orientation) and the contributions made by Khin and Ho (2019), among others, when they state that organisations, beyond technological orientation, must have the capacity to manage digital technology. The variables that define digital capability have been established based on the definitions provided by Ritter et al. (2020), among other authors.

5.2 Levels of digital maturity inside social organisations in the people care sector

Different authors describe different scales to define the level of digital maturity in a sector. According to Remane et al. (2017), the predominant literature is argumentative. The authors refer, among others, to the work carried out by Lichtblau et al. (2015), which defined three archetypes: newbies, beginners, and pioneers, and the report issued by PWC(2024), which defined four archetypes: digital novice, vertical integrator, horizontal integration, and digital champion. Pursuing the main objective of the present study, a methodological approach has been followed, based on a categorisation developed by the Board of Entities of the Social Third Sector of Catalonia (2024), that defines four possible levels of digital maturity for the social organisations:

1. Beginners: the social organisations are not really interested in the process of digitalisation and the digital transformation. They have no digital skills and they are not interested in obtaining them. They do not trust in the data available.
2. Intermediate: the social organisations have started some process of digital transformation in some areas or departments. They are aware of the importance of digital transformation but they present a reactive attitude. They develop some kind of transformation when necessary.
3. Advanced: the social organisations are implementing or have implemented digital planning in the organisation. They are aware of the importance of digitalisation and the importance of having ratios that measure the level of digital transformation. They have a team that is already engaged in digital transformation.
4. Senior: the social organisations innovate continuously. Technology and digitalisation are a key element in the development of their activity.

Consequently, when dimensions of the model are combined with the levels of digital maturity, it is possible to describe the characteristics of typical organisations, considering dimensions and levels of digital maturity. The result is visible in Table 1.

Table 1. Levels of digital maturity inside social organisations in the people care sector (defined by DIMCARE)

Dimension	Variables	LEVEL OF DIGITAL MATURITY			
		Beginners	**Intermediate**	**Advanced**	**Senior**
Digital Orientation	Implementation of the process of digitalisation in the front office and in the back office	None	Only one	It is entirely developed in one of them and has been started in the other one	Both front and back office
	The level of budget focused in the process of digitalisation	0%	0-10%	10%-25%	More than 25%
	Areas of organisation where the process of digitalisation is implemented	0	1-2	3-4	+4
	Digital solutions used in the process of digitalisation	No	Simple tools	Machine learning	Machine learning and artificial intelligence.
Digital Capability	There is a department or a specific person in charge	No	Periodically the management has to report about it	There is a person in charge	There is a department
	Attitude of employees versus the process of digitalisation	None	Reactive	Active	Active with knowledge
	Level of digital competences of employees that belong to the organisation	None	Intermediate	Advanced	Specialist
Sector Attitudes	Data (analysis and sharing)	No	There is an analysis of data only when there is a problem	There is an analysis of data periodically	There is an analysis of the data periodically.The organisations share the data
	Importance in the sector	None	Moderate	High	Very high
Administration attitudes	Programmes carried out to foster digitalisation	None	Proposed programmes without carried out them	Proposed programmes with a moderate level of development	Proposed programmes with a high level of development

Also, according to the questionnaire responses, a correlation model was established to provide insights into how different aspects of digitalisation relate to the overall digital maturity of social organisations in the people care sector across the three territories of Mataró, Varaždin, and Prato. This model aimed to identify relationships between the level of digitalisation and various factors, including Digitalization Process Metrics: presence of digitalisation initiatives, departmental involvement, employee attitudes, extent of digitalisation across different areas, and resource allocation; Importance of Digitalization Metrics: sector perception of digitalisation importance, types of digital tools utilised, and data utilisation practices.

From our point of view, organisations are currently more reactive than active, although there are some exceptions. In those exceptions, collaboration between organisations and local administrations plays an important role, and it is very important that the employees have digital skills, especially at the management level.

The digitalisation enablers:

1. The entity's size is determined by the number of employees and the level of turnover. Larger entities tend to have a higher level of digitalisation.
2. While the presence does not always imply digitalisation, having advanced technological infrastructure facilitates the implementation of digitalisation in the long term.
3. The extent of technical expertise within the management team directly correlates with the organisation's level of digitalisation.
4. A higher proportion of young employees in the organisation generally makes digitalisation easier, although it doesn't necessarily guarantee a higher predisposition.
5. If the sector prioritises digitalisation and public administrations actively promote it, organisations feel compelled to pursue it.

5.3 Digital tools in the social economy

In the DIMCARE project, tools used in the context of digitalisation of social enterprises and other organisations in the field of social economy occupy a central place. Based on a review of the available literature and research in the field, we have divided the digital tools used in this area into three areas. These areas are:

1. Digital tools and devices used for the needs of the main business processes in the area,
2. Digital tools as support for business processes,
3. Communication tools (which are actually a subgroup of the second group, but due to their greatest use they are singled out separately).

Below are descriptions of those tools. Additionally, we gave examples of concrete software for each group to describe the group better.

5.3.1 Communication tools

Communication tools include various computer and mobile applications that are used for everyday communication in all sectors and on an individual level. Considering that we are used to different applications for sending and receiving instant messages and have different profiles on social networks, it is precisely these tools that are easiest to keep as the ones through which we communicate in the field of social economy. These include:

1. E-mail addresses - most often those with which we are registered on various other services; these are most often Google mail and Apple mail, which we connect to Android and Apple mobile devices and can also be used via a computer. In other cases, these are all other e-mail addresses from different services, or official web addresses that users use at work.
2. Applications for sending and receiving instant messages and audio and video calling, such as Viber, WhatsApp, Telegram, etc.
3. Different social networks that allow both sending and receiving instant messages and audio and video calling, such as Facebook and its Messenger, Instagram or Tik Tok.
4. More recently, tools for holding real-time video meetings and conferences, including: Zoom, Webex, Jitsi, BigBlueButton, MS Teams and others.
5. For older users, we are talking about standard SMS messages.

These communication tools in the field of social economy are used by employees and volunteers for mutual coordination, but also for communicating with their users, clients or their representatives.

5.3.2 Digital tools as support for business processes

This group of tools includes the previously mentioned communication tools that we singled out because of their specificity, but also all other tools that serve to administer business processes, documenting, dissemination, and the like. These include:

1. Platforms for creating websites (Wordpress, Joomla, Wix, ...)
2. Tools from the Office package (Word, Excel, PowerPoint, Access...) or another similar package (Libre Office or Google documents) that are used to create documents, slides, budgets, analyses, databases, records and the like.
3. Tools for organising documents within the organisation (Google Drive, Dropbox, OneDrive, Alfresco Share, etc.)
4. Tools for electronic learning (Moodle)
5. Tools for member registration, online payment, event management and other association needs (MemberClicks Oasis and MemberClicks Atlas; Wild Apricot, Perosinify360, Mailchimp)

6. Crowdfunding tools (Indiegogo, Kickstarter, GoFundMe, Kiva, Zopa)
7. Tools for sale (webshop) (Shopify, Wix, BigCommerce, WooCommerce, PrestaShop, Weebly, ...)
8. At the end of this analysis, it is worth mentioning the large language models that can support the business processes.

Here, we include all the tools accepted at the social organisation level in the context of digital transformation and serve various support functions in the organisation.

5.3.3 Digital tools and devices used to meet the needs of the main business processes in the field of social economy

When we use a tool or device for the main activity of a social enterprise, we classify it in this group and not in the previous one. These are very specialised tools and devices that are targeted for a specific activity. We include:

1. The equipment and programs used in the sensory room used in the care of specific types of patients,
2. Equipment and programs for communicating with people who have specific disabilities (e.g. equipment and software that the famous Steven Hawking used to communicate with other people),
3. Various tools that help visually impaired and blind people monitor content from computers and mobile phones.

6 Conclusions

This paper was developed within the framework of the DIMCARE project. The primary objective of this paper is to consolidate the results produced during the 18-month project into a concise document that highlights the key scientific contribution: a model for assessing the digital maturity of organizations in the people care sector. Digital maturity in this sector is a multifaceted concept influenced by both internal and external factors. In this paper, we present and apply the model to organizations within the people care sector from the countries involved in the project. This model can serve as a valuable tool for future researchers and practitioners in the digitalization of the people care sector.

Based on the findings, we formulated four main recommendations for advancing digitalization in the people care sector. These recommendations are as follows:

1. Partnerships and Collaboration between Organizations: Collaboration is vital and can take two forms: (a) Collaboration within the same sector operating in the same geographical area (e.g., sharing websites, maintaining services, and ensuring cybersecurity) and (b) Collaboration between organizations, local governments, and universities/research centers, with universities and research centers playing a key role in training, designing, implementing, and promoting digitalization. Local governments should maintain a registry of social organizations and incentivize digital transformation by offering subsidies and training programs within communities.
2. Adopt a Proactive Approach: Organizations should be proactive rather than reactive in anticipating future needs. Collaborating with universities and research centers is crucial in this process. Additionally, establishing a dedicated department responsible for digital transformation is important. This department should possess broad expertise in areas such as healthcare, engineering, education, economics, and more. .
3. Digitalization of Both Back and Front Office Operations: Ensuring the continuity and efficiency of organizational processes requires the digitalization of both back-office and front-office functions.
4. Investing in Cybersecurity: Given the sensitive nature of data handled in sectors like healthcare and finance, investing in cybersecurity is essential.

The main limitation of this research lies in the limited number of organizations included in the model's evaluation and the reliance on self-reported data. Future research will involve further evaluation and refinement of the model, with adjustments made based on technological advancements.

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References

Schwab, K. The Fourth Industrial Revolution; Portfolio: 2017.

Roman, A.; Rusu, V.D. Digital technologies and the performance of small and medium enterprises. Studies in Business and. Economics. 2022, 17(3), 190–203. https://doi.org/10.2478/sbe-2022-0055

Taula del Tercer Sector (TTS). Estudi sobre l'estat de la digitalització al tercer sector. Accessed April 18, 2024. Available online: https://www.tercersector.cat/sites/default/files/2022-02/t3s_2022-02-03_informe_estat_digitalitzacio_tercer_sector.pdf

Scottish Council for Voluntary Organisations (SCVO). Taking a place-based approach to digital inclusion: The story so far. Accessed April 18, 2024. Available online: https://files.scvo.scot/2022/03/SCVO-Digital-Taking-a-place-based-approach-to-digital-inclusion-the-story-so-far.pdf

Khin, S.; Ho, T.C. Digital technology, digital capability and organisational performance. International. Journal of Innovation Science 2019, 11(2), 177–195. https://doi.org/10.1108/ijis-08-2018-0083

Sjödin, D.; Parida, V.; Leksell, M.; Petrović, A. Smart factory implementation and process innovation. Research-Technology Management 2018, 61(5), 22–31. https://doi.org/10.1080/08956308.2018.1471277

Gebauer, H.; Fleisch, E.; Friedli, T. Overcoming the service paradox in manufacturing companies. European Management Journal 2005, 23(1), 14–26. https://doi.org/10.1016/j.emj.2004.12.006

Parida, V.; Sjödin, D.; Reim, W. Reviewing literature on digitalisation, business model innovation, and sustainable industry: Past achievements and future promises. Sustainability 2019, 11(2), 391. https://doi.org/10.3390/su11020391

Ehret, M., & Wirtz, J. Unlocking value from machines: business models and the industrial internet of things.Journal of Marketing Management 2016, 33(1–2), 111–130. https://doi.org/10.1080/0267257X.2016.1248041

Hakanen, E.; Rajala, R. Material intelligence as a driver for value creation in IoT-enabled business ecosystems. Journal of Business & Industrial Marketing 2018, 33(6), 857–867. https://doi.org/10.1108/jbim-11-2015-0217

Loebbecke, C.; Picot, A. Reflections on societal and business model transformation arising from digitisation and big data analytics: A research agenda. The Journal of Strategic Information Systems 2015, 24(3), 149–157. https://doi.org/10.1016/j.jsis.2015.08.002

Ajzen, I. The theory of planned behavior. Organisational Behavior and Human Decision Processes 1991 50(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Gatignon, H., & Xuereb, J.M. Strategic orientation of the firm and new product performance. Journal of Marketing Research, 1997, 34(1), 77–90.

Grant, R.M. Prospering in dynamically-competitive environments: Organisational capability as knowledge integration. Organisational Science 1996, 7(4), 375–387.

Ritter, T.; Pedersen, C.L. Digitization capability and the digitalisation of business models in business-to-business firms: Past, present, and future. Industrial Marketing Management 2020, 86, 180–190. https://doi.org/10.1016/j.indmarman.2019.11.019

Liu, Z.; Shi, Y.; Yang, B. Open innovation in times of crisis: An overview of the healthcare sector in response to the COVID-19 pandemic. Journal of Open Innovation 2022, 8(1), 21. https://doi.org/10.3390/joitmc8010021

Kadoić, N.; Monllau Jaques, T.; Lacueva Rueda, J. Measuring the digital maturity of organisations in the people care sector. Sustainabi lity 2024, 16(20), 9053. https://doi.org/10.3390/su16209053

Deloitte Center for Health Solutions. Digital Transformation: Shaping the Future of European Healthcare; September 2020.

Creswell, J.W.;Creswell, J.D.; Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (4th ed.). Sage, Newbury Park, 2017

Regmi, P.R.; Waithaka, E.; Paudyal, A.; Simkhada, P.; van Teijlingen, E. Guide to the design and application of online questionnaire surveys. Nepal Journal of Epidemiology 2016, 6(4), 640–644. https://doi.org/10.3126/nje.v6i4.17258

Knott, E.; Rao, A.H.; Summers, K.; Teeger, C. Interviews in the social sciences. Nat. Rev. Methods Primers 2022, 2, 73. https://doi.org/10.1038/s43586-022-00150-6

Remané, G.; Hanelt, A.; Wiesboeck, F.; Kolbe, L.M. Digital maturity in traditional industries – An exploratory analysis. Conference Paper, 2017. Available online: https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1009&context=ecis2017_rp

Lichtblau, K.; Stich, V.; Bertenrath, R.; Blum, M.; Bleider, M.; Millack, A.; Schmitt, K.; Schmitz, E.; Schröter, M. Impuls-Industrie 4.0-Readiness. Impuls-Stiftung des VDMA: Aachen-Köln, 2015.

PWC. Industry 4.0: Building the digital enterprise. Accessed April 25, 2024. Available online: https://www.pwc.com/gx/en/industries/industries-4.0/landing-page/industry-4.0-building-your-digital-enterprise-april-2016.pdf

Caliński, T.;Harabasz, J.; A dendrite method for cluster analysis. Communications in Statistics 1974, 3(1), 1–27. https://doi.org/10.1080/03610927408827101