U-DIGITALIZE

U-Digitalize Model

U-Digitalize Model for digitalizing care services for people with functional diversity

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Preface

U-digitalize Project

U-Digitalize - Empowerment of third sector care professionals for digital transformation is a Cooperation partnership project in vocational education and training, approved in the framework of the Erasmus+ Programme. The project started on November 2021 and is planned to finish in October 2023.

Coronavirus pandemic has affected the socio-health care sector across the countries. Resilience of the care systems in front of this crisis relied in their capacity to digitalize the traditional face-to-face patient/user professional care model. As digitalization increases in importance and becomes one of the major drivers of change in post-pandemic times, the development of a reference model could be a valuable resource for organizations of social and health care in the third sector.

The U-Digitalize Model for digitalizing of care services for people with functional diversity, seeks to innovate by providing resources and guidelines for digital transformation in the care of this vulnerable group.

Aim & Partners

The main aim of the U-digitalize program is to empower professionals from the 3rd sector in order to be capable of virtualizing the care for people with functional diversity, providing them with the motivation and resources to be able to carry out their work through digital technologies.

U-Ditgitalize wants to offer models and proven references for the adoption of digital services as well as to take advantage of the potential of technology in an optimal way. Some of the specific objectives are:

- To promote a new organizational culture focusing on empowering professionals working in care sector organizations
- To incorporate new working models that increase the capacity and resilience of organizations.
- To make professionals aware of the importance of adapting to new working schemes in digital environments in order to offer quality services to users.
- To create a model of digitization care services for people with functional diversity aimed at organizations and institutions that offer physical and emotional maintenance services and support for community participation, from the private and nonprofit sphere.

The project is led by Federación PREDIF Illes Balears de Personas con Discapacidad Física PREDIF-IB (Spain) and is implemented by a team of 5 more partners from 5 European Countries: Etairia Nosou Alzheimer Kai Sinafon Diataraxon Athinon Somateio: AAADRS (Alzheimer Athens, Greece), Centro Orientamento Ausili Tecnologici Onlus: COAT (Italy), Lebenshilfen Soziale Dienste GMBH: LSD (Austria), Institutul National de Cercetare Stiinfica in Domeniul Muncii si Protectiei Sociale: INCSMPS (Romania), Media Creativa (Spain).

Target audience & Results

The target groups of our project are mainly:

- Health/social care professionals and volunteers
- Health and social organizations from third sector
- Health and social care professionals' trainers
- Dependent people
- Public health and care sector decision makers and governmental entities

The expected results of the project are two:

R1. Create a U-Digitalize Model for digitalizing care services for people with functional diversity with a specific aim to provide directly transferable benchmarks for digital transformation in the care of vulnerable groups, promoting third sector organizations' modernization and digital transformation.

R2. Create the U-Digitalize Training Programme based on the DigComp as a reference, with a specific aim to develop specific contents for the 5 basic areas of competence, applied to the development of guidance and support services for people with functional diversity.

The present report is answering to the first result and aims to present the U-digitalize Model.

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Methodology of the model

In order to understand the needs and to present a model of digitalization based on the specific target group we have started the construction of this model based on fieldwork and on evidence-based support. For this reason, we started by **doing research on digitalization experiences of third sector care organizations, in five national contexts** - Spain, Greece, Italy, Austria, Romania and to allow the compilation of results in one consolidated research report, which provided information on specific practices, challenges, possible solutions and resources related to digitalizing of care services for people with functional diversity. It intended to find needs, communalities, and key areas for digitalization, inspired by experiences of organizations and professionals in the participating countries.

The methodological approach was based on several principles:

- To collect information that integrates different perspectives, needs and views: managers of target organizations, as well as professionals and care workers.
- To provide country-level data in order to allow the project to formulate a model of resources that take into account the country variability and specificities.
- To allow data collection that considers a diversity of care services and sub-groups of beneficiaries.

Data collection has been carried out in the local language. For this report, translation into English has been carried out by partner organizations.

The methodological approach included two components of data collection:

- Interviews with managers and representatives of target organizations (including managers, decision makers, key personnel responsible with activities related to digitalization, etc.) – 27 interviews.

- Focus groups with professionals from the socio-health care sector providing services for people with functional diversity - 5 focus groups / 1 per country (5-10 participants per country).

Data collection took place in November 2022. Data gathering has been carried out both in a traditional face-to-face way, as well as online. Each partner organization was responsible for collecting data from its own country, according to guidelines and common templates (interview questions, focus group guide, and template for national reports) provided in Guidelines for research on digitalization experiences from 3rd sector care organizations.

Data have been collected from the various types of care organisations:

- care units for people with disabilities or physical challenges,
- day care centres,
- public hospitals,
- providers of phycological therapy and counselling, including youth coaching,
- elderly care units.

After the data collection had finished and the national reports from each partner were written, all partners decided on the basic points that the U-digitalize model should include based on the needs of the 3rd sector as defined by the field work. The final structure of the model was defined in 6 chapters:

- Implications of digitalization process.
- Benefits & advantages of digitalization.
- Obstacles/barriers of digitalization & how to overcome them.
- Recommendations for successful digital transformation.
- Necessary skills & competences for successful implementation.
- Tools & Assessment procedures.

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Chapter 1. Implications of digitalization

Introduction

Digital technologies are now an integral part of daily life, connecting people across the world like never before. However, the use of these technologies to improve population health is largely untapped, despite the vast potential for digital health solutions. The COVID-19 pandemic has highlighted the importance of digital innovations in healthcare, such as the use of smartphone apps to track the virus and AI to aid in diagnosis. Going forward, digitalization in healthcare is expected to improve outcomes in disease prevention, treatment, and nursing care. By leveraging big data, AI, and other technologies, healthcare can become more inclusive and efficient, tailored to individual needs and preferences. Digital health, or eHealth, encompasses a range of innovations in areas like doctor-patient communication and hospital management. Telemedicine, which uses telecommunication and electronic information technologies to provide health-related services, has increased access to high-quality healthcare and improved patient experiences by enabling remote consultations and reducing wait times. Overall, digital technologies have the potential to revolutionize healthcare and improve the well-being of populations worldwide.

Digitalization in Healthcare section

Digitalization has had significant implications in the healthcare sector, revolutionizing various aspects of healthcare delivery and, in some aspects, the same meaning of “healthcare”. Here are some key implications:

- *Enhanced Efficiency*: digitalization streamlines administrative processes, such as electronic health records (EHRs), appointment scheduling, and billing, reducing paperwork, reducing errors, and improving overall operational efficiency.
- *Improved Access to Information*: digitalization enables secure and centralized storage of patient data, making it easily accessible to healthcare providers. This facilitates quicker and more accurate diagnoses, treatment decisions, and coordinated care.
- *Telemedicine and Remote Care*: digital technologies enable remote consultations, telemedicine services, and remote monitoring of patients. This improves access to healthcare, especially for individuals in remote areas or with limited mobility and reduces the need for in-person visits.
- *Data-Driven Insights*: digitalization allows for the collection and analysis of vast amounts of healthcare data. This data can be leveraged to gain insights into population health trends, disease patterns, and treatment outcomes, supporting evidence-based decision-making and personalized care.
- *Patient Empowerment*: digital tools like mobile health apps, wearable devices, and patient portals empower individuals to actively participate in their own healthcare. Patients can access their health records, monitor their health metrics, and engage in self-management, leading to better health outcomes.
- *Interoperability and Care Coordination*: digitalization promotes interoperability among different healthcare systems, facilitating seamless sharing of patient data and improving care coordination between healthcare providers. This reduces medical errors, redundant tests, and enhances care continuity.
- *Health Monitoring and Preventive Care*: digital health solutions facilitate continuous health monitoring and preventive care strategies. Wearable devices and health apps can track vital signs, physical activity, sleep patterns, and provide timely reminders for medication or health interventions.

Digitizing health involves using new technologies that have brought several benefits to the healthcare sector. Some of the most widespread solutions include:

- **Mobile apps** dedicated to health turn smartphones into personal trainers, sleep monitors, diagnostic devices and more.
- **Serious games** are used as learning resources for healthcare professionals and people wishing to learn more about specific pathologies.
- **Wearable technology**, such as smart clothing and accessories, can monitor and collect information on our health and physical condition.
- **Augmented reality** can help health professionals visualize organs in 3D and check a patient's record in real time.
- **eHealth record** means information can be stored in one place, making it available anywhere and allowing healthcare staff to access it at any time.
- **Internet of Things (IoT)** helps in customizing healthcare, saving costs, reducing the likelihood of incorrect diagnosis, and shortening waiting times. The connection between the physical and digital world will be crucial in equipment such as inhalers and audiometers.
- **Big data** allows for tailored treatments and helps in detecting the risk factors and potential side effects of drugs by performing macro data analysis. The insights gained from big data have proven critical in understanding and containing the spread of COVID-19.
- **AI and Machine Learning**: digitalization enables the application of artificial intelligence (AI) and machine learning algorithms in healthcare. These technologies can assist in early disease detection, risk assessment, medical imaging analysis, and personalized treatment recommendations.
- **Blockchain** provides secure access to a patient's health record, making administration more efficient. It also allows pharmaceutical labs to keep more precise records in the drug production process.

- **3D and 4D printing** offer new possibilities in medical technology. For example, 4D printing in ultrasound scans gives us more precise insight into the structural and functional development of the nervous system of a fetus. Moreover, 3D printing can be used to produce medical items such as safety equipment during shortages, such as the coronavirus crisis and personalized solutions that better fit with patient anthropometrics.
- **Chatbots** provide a tool for faster and more direct doctor-patient communication. WHO-World Health Organization set up one of these channels during the COVID-19 pandemic.
- **Virtual reality technology** can assist in patient rehabilitation and treating psychological disorders, making significant contributions to healthcare.

Online consultation & advice

Online medical consultation and advice refers to the provision of healthcare services remotely through digital platforms. It allows individuals to consult with healthcare professionals, seek medical advice, and receive diagnosis and treatment recommendations without physically visiting a healthcare facility.

Here are some key points about online medical consultation and advice:

- *Convenience and Accessibility*: online medical consultations provide convenient access to healthcare services, especially for individuals who may have limited mobility, live in remote areas, or have busy schedules. It eliminates the need for travel and reduces waiting times, making healthcare more accessible.

- *Virtual Communication Channels*: online consultations are typically conducted through video calls, audio calls, or chat platforms, allowing patients and healthcare professionals to communicate in real-time. This enables effective communication and interaction, simulating an in-person consultation experience.
- *Primary Care and Specialized Services*: online consultations can cover a wide range of healthcare needs, including primary care services such as diagnosis, treatment, and prescription refills. It can also extend to specialized services like dermatology, mental health counselling, nutrition counselling, and more.
- *Non-Emergency Situations*: online consultations are generally suitable for non-emergency situations, where the physical examination can be substituted with detailed medical history, symptom description, and visual inspection through video calls. In emergency cases, immediate in-person medical attention is still necessary.
- *Medical Advice and Second Opinions*: online consultations provide an avenue for seeking medical advice and second opinions. Patients can consult with multiple healthcare professionals remotely, gaining different perspectives and making informed decisions about their health.
- *E-Prescriptions and Referrals*: in many cases, online consultations can lead to e-prescriptions or referrals to appropriate healthcare providers or specialists. Patients can receive their prescribed medications directly from pharmacies or receive guidance on further diagnostic tests or treatments.
- *Privacy and Security*: online medical platforms prioritize patient privacy and employ security measures to protect personal health information. It is important to choose reputable and secure platforms that comply with applicable healthcare regulations and data protection standards.

- *Limitations and Considerations*: online consultations have some limitations. They may not be suitable for all medical conditions, as some cases may require physical examination, diagnostic tests, or in-person procedures. In addition, technical issues, lack of access to reliable internet connections, and language barriers can constitute challenges.

It is important to note that online medical consultation and advice should complement traditional in-person healthcare services and should not replace them entirely. It is advisable to consult with a healthcare professional to determine the appropriateness of online consultations based on individual healthcare needs and circumstances.

Online therapy

Online therapy, also known as e-therapy or teletherapy, refers to the provision of mental health counselling and therapy services through digital platforms. It enables individuals to access therapy sessions remotely, connecting with licensed therapists and counsellors via video calls, audio calls, or text-based communication.

Here are some key points about online therapy:

- *Accessibility and Convenience:* online therapy eliminates geographical barriers and allows individuals to receive therapy from the comfort of their own homes or any location with an internet connection. It improves access to mental health services, especially for those in remote areas or with limited mobility.
- *Variety of Therapy Formats*: online therapy can encompass various therapy formats, including individual therapy, couples therapy, family therapy, and group therapy. Different modalities, such as cognitive-behavioral therapy

(CBT), psychodynamic therapy, and mindfulness-based therapy, can also be provided online.

- *Flexible Scheduling*: online therapy offers flexibility in scheduling appointments, making it easier for individuals with busy schedules to find suitable time slots for therapy sessions. It can accommodate individuals who may have work, childcare, or other commitments that limit their availability during traditional therapy hours.
- *Privacy and Confidentiality:* online therapy platforms prioritize client privacy and employ encryption and secure communication channels to protect personal information. It is important to choose reputable platforms that adhere to privacy regulations and maintain strict confidentiality.
- *Visual and Non-Verbal Cues*: video-based online therapy allows for visual cues and facial expressions, which can enhance communication and understanding between the therapist and client. Non-verbal cues, such as body language, can still be observed to some extent, aiding the therapeutic process.
- *Effective for Many Mental Health Concerns:* online therapy has been found to be effective for a wide range of mental health concerns, including anxiety, depression, trauma, relationship issues, stress management, and more. Research suggests that online therapy can produce outcomes comparable to traditional in-person therapy.
- *Flexibility in Communication*: online therapy platforms offer various communication options, including video calls, audio calls, and text-based messaging. This allows clients to choose a communication method that feels most comfortable and suits their preferences and needs.
- *Ethical and Professional Standards*: online therapy practitioners adhere to the same ethical and professional standards as traditional therapists, ensuring the provision of quality and ethical care. It is important to seek therapists who are licensed and appropriately trained in delivering online therapy services.

While online therapy has many benefits, it may not be suitable for everyone or all mental health concerns. Some individuals may require in-person therapy due to the nature of their condition or the need for specific therapeutic interventions. It is recommended to consult with a mental health professional to determine if online therapy is appropriate for individual circumstances and needs, then taking the responsibility to supervise progress and appropriateness of therapy during treatment.

Online educational activities

Online educational and informational activities have become increasingly prevalent in the healthcare sector, offering numerous benefits and opportunities for both healthcare professionals and the general public. Here are some key aspects and examples of online educational and informational activities in the healthcare sector:

1. Webinars and Online Courses: healthcare organizations, professional associations, and universities offer webinars and online courses covering various medical topics. These platforms provide interactive learning experiences, allowing participants to acquire new knowledge, stay updated on the latest research and advancements, and earn continuing education credits. Healthcare professionals can enhance their skills and expertise while balancing their busy schedules. There are different types of online courses:

- Asynchronous Online Courses don't take place in real–time. Students are provided with content and assignments and are given a time frame to complete course work and exams. As a result, there is no class meeting time. They are effective for those who have time constraints or busy schedules.

- Synchronous Online Courses require the instructor and enrolled students to interact online simultaneously. Similar in some ways to a webinar, participants interact through text, video or audio chat. They enable students to participate in a course from a distance in real time.
- Hybrid Courses, also known as blended courses, are learning environments that allow for both in–person and online interaction.

2. Continuing Medical Education (CME): online platforms offer CME courses and programs for healthcare professionals to fulfil their continuing education requirements. These courses cover a wide range of medical specialties, providing updated knowledge, evidence-based practices, and professional development opportunities. Online CME activities often include assessments or quizzes to validate learning and to provide certification.

3. E-Learning Platforms: online platforms dedicated to healthcare education, such as medical e-learning portals, offer a wide range of courses, lectures, case studies, and quizzes. These platforms often provide comprehensive educational resources tailored to specific medical specialties, allowing healthcare professionals to access educational content conveniently from anywhere. They offer flexibility in terms of pace, access to resources, and the ability to learn from anywhere with an internet connection. It's important to research and select reputable e-learning platforms and courses that align with your specific training needs, learning style, and goals.

4. Online Medical Journals and Publications: numerous medical journals and publications have migrated to online platforms, offering free or subscription-based access to their articles, research papers, and clinical guidelines. Online access allows healthcare professionals to stay informed about the latest medical research, evidence-based practices, and treatment guidelines, supporting them in delivering high-quality patient care.

5. Health Information Websites and Apps: official healthcare websites, health information portals, and mobile health apps, provide valuable information on various health conditions, preventive measures, treatment options, and healthy lifestyle practices. These platforms empower individuals to access reliable health information, self-assess their symptoms, and make informed decisions regarding their healthcare.

Online educational and informational activities in the healthcare sector have revolutionized the way healthcare professionals learn, collaborate, and provide care. They enhance accessibility, flexibility, and cost-effectiveness, ultimately benefiting patients by improving healthcare quality and outcomes.

Online events

Online events, conferences, workshops, and webinars have become increasingly prevalent in the healthcare sector, offering a range of benefits and opportunities for knowledge sharing, professional development, and networking. Here's an overview of these online formats in the healthcare sector:

1. Online Events and Conferences: online events and conferences in the healthcare sector bring together healthcare professionals, researchers, industry experts, and stakeholders to discuss and exchange insights on various topics. These events feature keynote speeches, panel discussions, presentations, and interactive sessions. Participants can attend virtually from anywhere, eliminating the need for travel and allowing broader access to knowledge and expertise. These events facilitate knowledge sharing, networking, and collaboration among healthcare professionals, regardless of their geographical location.

2. Workshops: online workshops provide healthcare professionals with opportunities for skill development and continuing education. These sessions focus on specific topics or skills, such as clinical techniques, research methodologies, healthcare management, and new technologies. Participants can engage in hands-on learning, interactive discussions, and receive guidance from experienced facilitators.

3. Webinars: webinars are online seminars that allow healthcare professionals to attend educational presentations and discussions remotely. They cover a wide range of healthcare topics, including advancements in medical research, treatment guidelines, emerging technologies, and best practices. Webinars often include Q&A sessions, enabling participants to interact with presenters and gain additional insights.

4. Virtual Conventions and Expos: virtual conventions and expos replicate the experience of traditional in-person events in a digital format. These events showcase healthcare products, services, innovations, and research. Participants can explore virtual booths, engage in live demonstrations, attend presentations, and network with exhibitors and attendees.

These types of digital events, give to the participants some benefits such as:

- *Networking and Collaboration*: online events, conferences, and webinars provide networking opportunities, allowing healthcare professionals to connect with peers, experts, and potential collaborators. Digital platforms facilitate networking through features like virtual breakout rooms, chat functions, and discussion boards. Participants can exchange ideas, share experiences, and establish professional relationships.
- *Global Reach and Accessibility*: online events and webinars offer global reach, allowing healthcare professionals from different parts of the world to

participate and contribute. The digital format ensures accessibility for individuals who may have limitations, such as geographical constraints, time restrictions, or mobility issues.

- *Recorded Sessions and On-Demand Access*: many online events and webinars provide recorded sessions, allowing participants to access content on-demand. This feature enables individuals to revisit presentations, catch up on missed sessions, and learn at their own pace.
- *Cost and Time Efficiency*: online events often have lower registration fees compared to in-person events, reducing costs associated with travel, accommodation, and meals. Moreover, attending online events saves time as there is no need for extensive travel and allows professionals to participate without interrupting their daily responsibilities.

As online events continue to evolve, organizations are continually exploring innovative ways to enhance engagement, interactivity, and networking opportunities in the virtual space. These digital formats offer flexibility, knowledge sharing, and professional growth opportunities in the healthcare sector, complementing traditional in-person events and fostering collaboration on a global scale.

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Chapter 2. Benefits & advantages of digitalization

Introduction

Most organisations now emphasise active participation in digitalization (Schneider, 2019). More specifically and concerning the health sector, the utilization of technology has led to a human-centred, citizen-centred health service delivery system. The term "eHealth" covers a wide range of tools based on information and communication technologies aimed at better prevention, diagnosis, treatment, monitoring and management of health and lifestyle. We are now in the era of creating an electronic patient record with the primary purpose of collecting long-term health information for patients. This electronic patient record has a range of benefits concerning not only the patient but also research. A range of medical information and records are now available preventing possible medical mistakes and unnecessary medical examinations (saving not only time but also medical cost). This information is also available for statistical analyses in order to be useful in research. Moreover, the use of digitalization in health provides a range of opportunities in therapy and prevention as well as a link between health problems and social services available.

It is true that this digital transformation of health has a number of problems that need to be solved such as ethical, legal and privacy issues. Nevertheless, the benefits and the advantages of this transformation are many and they have revolutionized health services. The purpose of this chapter is to focus on these benefits and advantages of health digitalization. The chapter is organized in three parts evaluating the advantages of digitalization by: accessibility of services, organization of workplace and services and finally communication.

Accessibility of services

Concerning the accessibility of services, the most powerful advantage of digitalization is making these services **accessible for all**. This includes equality in finding medical and health-related information for people who cannot move, see, hear or people who live in remote areas or people who do not have the opportunity to pay a private doctor. Moreover, the services provided are not of the minimum quality. On the contrary, services are usually provided holistically, from a multi-disciplinary and expert to the problem team including doctors, psychologists, social workers, nurses and/or physiotherapists. In this way, patients do not only have access to health services but also access which is difficult to find as it includes the cooperation of a range of specialized professionals.

Another important advantage of digitalized services concerns the **reduction of risks**. This aspect concerns frail older people who cannot move in order to reduce fall risk, caregivers who cannot leave the people who care alone in order to access medical facilities in order to reduce risk of burden but also people with special abilities in order to find solutions without moving from home, without risks of injuries. It is important that people who are either experiencing moving problems or do not have the necessary time/resources to go to the doctor could benefit from health care services “at home” in order to reduce also the risk of the existing problems becoming even worse because of negligence. By using digital services, users could have access to health care services from their house with just one click, reducing, this way, all the risks and finding the best care possible.

Moreover, new digital solutions have been recently created for people with special abilities & needs. These new solutions include **mental empowerment, tele-consultation and tele-medicine, tele-psychotherapy and peer group forums but also chat groups.** Tele-consultation and tele-medicine have been a life-saving experience during the pandemic. Doctors could use a platform in order to prescribe medication in real time without the need for the patient to come and pick it up. This created a solution for patients who had already a steady prescription of their medication that needed only renewal every three or six months. Moreover, it was a very good practice for patients who had already a diagnosis and could refer to their doctor in order to inform them about their follow up or new symptoms. Finally, in some cases, doctors could see through camera patients and try to define symptoms in order to attempt a diagnosis and prescribe medication. Nevertheless, this practice should be very careful and needs to be placed in a specific framework in order to avoid misjudgment.

Distant mental empowerment was also used and tested during the pandemic. Because of the urgency of the situation, many day care centers especially for people with dementia had been created and used this way in order to keep their patients active. Even if, in the beginning, many healthcare professionals were skeptical about the success of this technique especially with elderly population, it has proven to be a success and has kept patients active and busy during the quarantine of the pandemic. Moreover, caregivers were not abandoned as in the same time tele-psychotherapy and peer group forums were also available for them in order to support them with their daily care and the burden of caregiving in a very difficult period because of the pandemic.

Finally, an important advantage of digitalization in the healthcare system was the **inclusion of isolated areas**. The access to healthcare is no longer limited by time and space, which means avoiding unnecessary travel, expenses and fatigue. Technology has brought healthcare to more people, especially patients at risk of exclusion, which means more equal opportunities for everyone with an easy follow up and prescription. But the inclusion of isolated areas has to do also with the caregivers and the healthcare professionals working in these areas. A huge number of seminars and information is now available in order to have a better quality of life, a better understanding of the patient but also of their own needs and, because of this, a better treatment and less burden. An important advantage of these seminars is also accessible information about the patient's and the caregiver's rights, the available allowances that they might exist as well as the laws involved in the protection of the well-being of patients and caregivers.

Organization of services

Apart from the accessibility of services, digitalization has an important advantage concerning the reduction of distance and cost of services. Specifically, **cost effective solutions** had been created in health management in order for the health care professionals to give more concrete information, to be able to handle more specific questions and provide also tailored answers to specific needs. Another benefit of this was the efficient management of time and space of health care professionals. Most healthcare units suffer from a lack of space, they can see only some patients per day and professionals will consume more time per person. By using technology, professionals could work in any space (sharing offices or from home) and use less time per patient by answering specific questions each time. It was observed that during the pandemic period, healthcare professionals had organized their planning in a most efficient way as they did not experience the

problem of space. They could work in one office with their computer, a phone and a camera and did not need a special office in order to receive patients or caregivers one by one. This was also visible in the waiting lists of many healthcare services. Phone calls could be treated in real time in most of the cases as the professionals could work in parallel and without any space obstacle.

Furthermore, the support was clear and holistic and had led to a **reduction of unnecessary examinations and misuse of services** and, therefore, a reduction of healthcare cost. It was observed that there was a better collaboration between healthcare professionals and services as everything was shared in real time by a computer and the information was not lost or misplaced between them. There was a direct demand between services without waiting for an empty space or time schedule. Sharing information had been proven easier as everything was shared in a common drive, there was no need for a full update concerning a patient and nothing was lost in paper pencil notes. A patient or a caregiver could take all necessary information in just one call as the case was usually transferred from one service to the other without the need of booking a special appointment with the healthcare professional.

Finally, another important improvement of digitalization is that **information available for any responsible of a service** to judge if there is room for amelioration of services. This leads to a better organization and a better offer of services. The work of healthcare professionals is now online, it can be visible, their effort could be considered and praised, or, in case of a problem, it could be reorganized in order to be more productive and successful. Moreover, **opportunities for research** are more obvious and organized through digitalization. Responsible of healthcare units could have clearer and more organized ideas about research protocols that could be organized more efficiently as everything is now digital and information is available to all.

Communication

The third big chapter devoted to the benefits of digitalization is about communication of services. First of all, there is clearly **a flexibility for healthcare professionals to organise their work**. They can work from home, they can reduce workload, they can be more efficient and productive and with a more transparent working schedule. Moreover, digitalization creates **opportunities for healthcare professionals who live in remote areas** not only to be more informed and updated but also to expand their services through online services. This could also solve the problem of healthcare professionals who do not wish to stay in isolated areas because of their work limitation.

But the most important benefit of digitalization concerning communication is, with certainty, the **facilitation and the speeding up of lifelong learning and team efficiency**. Digital tools offer workshops, seminars and updates on health-related issues even every week. Healthcare professionals could be informed about new techniques, methods and services in real time. Important and international bibliography concerning healthcare is not only available online but also presented through online meetings of healthcare teams. Moreover, frequent meetings concerning various subjects lead to team bonding and exchange of experience between healthcare professionals. Through these meetings healthcare professionals are informed about the various services available (leading also to a better answer to patients' needs), get to know better their colleagues and their work and also, they feel a part of a multidisciplinary team. Furthermore, frequent team supervision and support through online guidance is possible to encounter problems like the burnout of healthcare professionals or harassment at work. Finally, problem solving, and enhancement of solutions is faster and more efficient as online meetings are easier to be scheduled and, for this reason, more frequent.

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Chapter 3. Obstacles/barriers of digitalization

Introduction

Innovation helps Europe to reinforce its technological leadership and to generate solutions to societal challenges. Such innovations bring digital transformations that are becoming essential for people to succeed in contemporary workplaces. The strategic move towards digital transformation enables organizations to improve their customer relationships, increase sales and company growth, and strengthen their competitive positions (Agrawal et al., 2020). Therefore, most organizations now emphasize active participation in digitalization (Schneider, 2019).

Digital transformation entailed significant changes in the organization's business model, which, in many cases, affect procedures, resources, operational methods, or culture. As a result, deciding how to implement digital transformation has long-term implications for the organization and requires a strategic approach (Henriette et al., 2016).

Poor infrastructure required for digitalization is a significant barrier that socio-health organizations in all countries must overcome. Due to this obstacle, organizations must deal with increased costs with new equipment, internet connection, software, fees for using online platforms with no time or user limit restrictions and other related tools.

Many beneficiaries need to improve their digital skills in order to reach at least the basic level. The lack of understanding and confidence in using ICT, which is especially prevalent among the elderly, imposes difficulties for organizations that provide care for this group.

Another significant barrier is the availability of technical support, as many organizations have no internal IT department and cannot get permanent technical support.

An additional challenge socio-health care organizations encounter in digitization is related to the process of turning existing paper-pencil content into digital form.

Obstacles & barriers

- Lack of financial resources

Significant funding is needed for technology and know-how for digital transformation. Investments in new digital technology come with high risk and an unclear return. Some socio-healthcare organisations will need help to raise money or to have access to more financial resources. One of the main barriers to digitization is the insufficient suitable financing sources for the related costs (Sumrit, 2021).

Moreover, important investment is needed for organisations to have access to digital technology, resources, a qualified workforce, and new organisational capabilities. Organisations must train their staff on working with digital technologies in order to make their efforts for digital transformation profitable. Such processes and investments require funding (Agrawal et al., 2019).

- Lack of trust in technology and mentality

Another obstacle to digitalization is the lack of trust in technology among both healthcare professionals and beneficiaries.

Employees often need to become more familiar with digital tools and the new working environment. Sometimes, they resist changes due to the fear of learning something new or to the belief of increased job requirements. Also, some workers could think that digital transition could threaten their position and lead to job loss (Sumrit, 2021).

Resistance towards digitalization is fueled by lack of creativity and strategy, fear of unpredictability, lack of adaptability and inadequate support for innovation, poor relevant competencies, and insufficient innovation culture (Vey et al., 2017).
Typical difficulties experienced by organisations facing transitions and changes usually include (Vey et al., 2017, apud. Oertig & Kels, 2014):

- Managers and staff are unsure of what innovation entails for their organisation.
- Lack of clear and inspiring objectives/goals.
- A lack of risk-taking and a wrong perception not to see failure as a learning opportunity.
- Inadequate knowledge sharing among employees and beneficiaries.
- Also, challenged people and elderly, the main beneficiaries of socio-health care services, tend to be more reluctant to change than others and not to accept digital solutions addressing their problems, as this is uncommon to them and raises uncertainty.

❖ Technical support

Very important needs of socio-health care organisations are related to the necessity for professionals and care workers to possess the required digital skills, as well as for available and effective digital resources and infrastructure.

According to Agrawal et al. (2020), the digital transition will be slowed down or delayed by the lack of digital competencies. The implications of new digital

technology for socio-health care organizations are significant, but without adequate human resources, the advantages of digitalization cannot be reached (Agrawal et al., 2020).

Many healthcare workers and professionals do not have on-site technical assistance to help them in setting up and everyday use of the equipment and additional applications, data processing and sharing or to provide digital support to beneficiaries. From this point of view, socio-healthcare organisations require an IT department to address problems, help users, organise protocols, and manage data security measures. Therefore, every healthcare organisation should have funds for at least one IT employee.

- ❖ Security risks and ethical considerations

The rising complexity of the IT networks that support today's socio-healthcare organisations and the large volume of data passing through them has made guaranteeing network and data security a challenge (Haggerty, 2017). According to a study carried out by Vaidya et al. (2018), many organizations initially rejected digital technologies because they were worried about security risks and lacked confidence in digitalization. Some socio-healthcare organizations may experience security problems, such as payment security, cyberattack, privacy, and data confidentiality (Colicchia et al., 2019).

These concerns are justifiable because, in general, service providers may experience transaction cancellations, delays, or personal data loss because of cyber-security breaches. However, the effects and losses in the healthcare sector could be much more severe (Haggerty, 2017). This situation is linked to low digital skills and limited knowledge about ICT, increasing security challenges etc.

Healthcare IT specialists should place a high priority on securing and monitoring networks. However, this task is challenging given the introduction of next-generation technologies and the frequent, ongoing updating of legacy systems to increase network efficiency, speed, and security (Haggerty, 2017).

Another problem related to digital transformation is the misunderstanding of copyright. There is a common misperception that anybody can use the contents of the internet without the original author's permission. However, these contents are protected by copyright law regardless of whether they are published on paper or the internet (Mahesh & Mittal, 2009).

Facing the challenges

As we saw in the previous part, there are a lot of obstacles and challenges for digital transition in socio-healthcare organizations. Thus, managers, healthcare professionals and workers must be well-informed while engaging in such transition. First, it is necessary to build a strategy of how the transition can become possible. This step could be fed by various resources guiding healthcare centres to navigate digital transition.

Second, there will be the need for healthcare professionals and care workers to understand the implications of digital transition, what are their advantages and disadvantages, and embrace this transition with positivity and have no doubts about it. Also, healthcare beneficiaries must be prepared with respect to digitalization and how this transition would help them in dealing with their difficulties and problems. So, this process will mostly be supported by healthcare professionals and care providers that work directly with them. This means that

healthcare beneficiaries have a certain trust in their healthcare providers and will accept the digitalization more easily.

Altogether, deep understanding of this process, adaptability, and trust that this is the best solution in keeping step with nowadays reality are highly needed in order to overcome the obstacles to digital transition.

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Chapter 4. Recommendations for successful digital transformation

Introduction

Digital transformation is one of the key challenges facing business nowadays and one of the salient aspects of it is that access to the technology itself is rarely a problem (Saarikko, Westergren & Blomquist, 2020).

Digital Transformation is about adopting disruptive technologies to increase productivity and social welfare (Ebert & Duarte, 2018). In the process towards a digital transformation, there are some important steps that we must keep in mind. First of all it's necessary to pay attention to financial investment because all the changes needed will have an economic cost, related as well with the well-equipped and ergonomic workstations and the corporate network.

As important as the financial investment will be the human resources. It will be necessary to have an IT Department who will take care about the technical support, the knowledge for digitalizing the records of all the data, the training on skills and software for the professionals, etc. Much of the burden of work in this digital transformation will be in the hands of the IT Department.

Once all the whole process is done, or is on the way to being done, we need to start working on campaigns focused on the benefits of digital transformation and how to increase awareness about that.

Financial investment

Investing in an operational backbone must be a prerequisite for success in the digital economy (Sebastian et al., 2017). As these same authors comment, without such a base, a company will lack the foundational capabilities that are needed to enable its digital services platform to provide transaction transparency and to support standardized business processes.

The first step on all this transformation must be to get financial resources from grants and projects for investing in high-quality digital infrastructure, necessary to be able to do a correct job. For that, we will have to work to increase awareness among funders regarding the financial resources that social and health organisations need for the digital transition.

One way to maintain this financing is obtaining good results, so the financing company will be able to verify that its resources have been used effectively and efficiently (Gunawan & Serlyna, 2018).

Digital transformation technicians

The role of the Digital Transformation Technicians (DTT) at organisations has changed over time from “as a support function” to “as a driver for business innovation” (Nissen, Lezina & Saltan, 2018). It will be the most important department at the beginning of the transformation.

DTT leaders can begin to define the architecture for a digital services platform by focusing on a small set of digital innovations they believe will be critical to business success and, once the company has established the data requirements for a small set of critical business components and has set up APIs for accessing the needed data, it can then build the infrastructure needed to protect, connect, analyze and support innovative digital services (Sebastian et al., 2017).

The DTT Department must be able to provide permanent technical support as well as create and guarantee interfaces between staff and technical support. Another option if it's not possible to create a DTT Department at that moment is to hire an easy-to-reach external collaboration.

Another of its functions will be to organise technical solutions and have the knowledge for digitalising the records of health social care data aside from developing clear and dedicated directives and guidelines on the procedures to be followed while providing digital care services.

Ergonomic workstations

The organisation will have to make accessible, easily usable and integrated tools in addition to simple user interfaces. Creating a well-equipped workspace with good computers, software and microphones that can support remote communication will be overriding to doing a good job. Another important issue will be paying attention to providing a high-quality internet connection (optical fiber and good internet provider company). Smart technology such as smart boards, smart TVs, tablets, VR glasses among others will be the new tools that professionals have to learn how to use.

Besides, we can't forget the importance of the chairs. A study from Wojcikiewicz determined that a good chair can increase employees' effectiveness, minimize fatigue and stress while performing their tasks (Mas'udah Asmui, Saat, Mohamad, & Wahid, 2021).

Corporate network

It will be necessary to create a documentation system that must be homogeneous, accessible and easy to use.

The IT Department will be in charge of building a corporate network (such as a shared cloud or a server) where all professionals can find all the necessary protocols for each digital tool, as well as any necessary explanation on how to use them and how to solve a problem when it is arising.

Will also be suitable to provide an online library with teaching and learning material for all existing digital technology in health and social care services, which serves as knowledge for all professionals in the sector and also to be updated in new existing programs.

Another interesting tool could be the use of VR glasses (can be used for the treatment of depression, anxiety, rehabilitation, etc.) along with the provision of learning videos and access to all existing online tools that are used.

Training on skills & software

A lot of professionals are still mistrusting new technologies, so it will be necessary to do training and further education for all the staff. It should be based on a thorough diagnosis of skills and needs and should address both basic digital skills and more advanced knowledge on specific software.

It would have to improve the knowledge about assistive technologies. The term “assistive technology device” means any item, piece of equipment or product system that is used to increase, maintain or improve functional capabilities (Alper & Raharinirina, 2006). Assistive products are essential tools because it enables people with difficulties in function to live healthy, productive, independent, and dignified lives (World Health Organization, 2017).

As Alper & Raharinirina (2006) say, it’s imperative that professionals who are working directly with these persons and their family members be adequately trained to provide the support and accommodations necessary for people with disabilities so they can enjoy all of the benefits that Assistive Technology has.

And, as already explained in chapter 3, we can't forget the digital barrier that users may have. That's why it could be interesting to do training with them learning to use the devices and platforms.

Campaigns on benefits

Digital transformation is a complex process that needs to be evaluated in a holistic approach (Yucel, 2018). As this same author indicates, to measure the benefits, relevant dynamics (that includes the digital disruption characteristics in the corporation, the objectives with the digital transformation, the expected benefits, and the risks among others) should be identified.

Also, we can't forget that our professionals and their work tools are very important if we want that everything goes well, so, for example, it could be appropriate to identify and empower the worker's resources among care professionals who help the digital transition, as well as to promote networking and exchange of practices among care workers and professionals for learning from each other.

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Chapter 5. Necessary skills & competence for successful implementation

Introduction

As the U-Digitalize National report on the digitalization experiences of third sector care organizations has revealed, the digital skills of professionals and caregivers are the most important requirements for social and health care organizations, along with resources and infrastructures.

For successful implementation of digitalization, it is fundamental that the benefits of digitalization are obvious to all involved: There must be a willingness to change on the part of both staff and institutions in order to avoid confusion and duplication of workload due to digitalization. Measures should always be oriented towards the benefits for the beneficiaries, as digitalization provides opportunities to foster inclusion of people with functional diversity. To overcome a possible digital divide and change the attitude of staff and beneficiaries towards digitalization, organizations need to focus on the soft skills and hard skills required and provide tools and measures to improve them.

The following guidelines and recommendations are based on the Digcomp framework (Vuorikari et al., 2022), and adapted to the needs of the third sector employees, according to the project research previously conducted.

Basic skills & literacy

The digital transformation requires so-called digital literacies on the part of both professionals and target groups, which means knowledge and competences on different levels that enable the use and critical engagement with them (Klinger et al., 2022).

Basic digital skills are mostly taken for granted today, but to ensure these core competencies are met, adequate training opportunities need to be provided to create standards for all employees (Becka et al., 2020).

It is necessary to allocate financial and time resources and to analyse the needs and equipment for e-learning and training courses.

It is a prerequisite that all employees at all levels of the organisation are equipped with the appropriate hardware according to their activities in order to be able to use digital applications adequately, as well as barrier-free accessibility for professionals and beneficiaries (Klinger et al., 2022).

For a successful implementation of digitalisation, it is crucial to improve basic digital skills of all stakeholders. A first step could be to identify the digital competence level of professionals. This can be done using existing digital competence frameworks such as the DigComp model, and targeted training objectives can be set based on the results (e.g., the DigiComp model for Austria: Kompetenzmodell - fit4internet). Special attention should be given to basic skills such as searching and evaluating digital information, storing and retrieving information. It is important to deal with statistical data and online information for relevant support opportunities, e.g. finding jobs or training and funding opportunities, digital searches for special health needs, technologies or support methods.

In addition to training in basic digital skills (Office package, documentation tools, etc.), permanent support from the IT department is recommended. A digital platform (e.g., Wiki, Ilias, Intranet, MS Teams) is suitable for support, where information can be permanently accessed and training videos are available showing instructions for the digital applications in simple language (Klinger et al., 2022).

A further support for employees is the creation of a central, low-threshold information and contact point for learning opportunities, e.g., through the use of platforms such as Ilias, which support self-learning.

An important role is also played by so-called key users, i.e., particularly digital-savvy employees who are willing to support their colleagues in making new digital applications usable for their daily work practice, as well as peer-to-peer exchange among employees.

As digitisation is based on the principle of standardisation, it can have a negative impact on the individual needs of beneficiaries in different areas (e.g., digitised documentation). For example, deviations from the set standard can become a disruptive factor. With regard to the person-centred design of the care relationship, special challenges arise from the use of standardisation-oriented tools. For example, important information gained in interpersonal contact may be lost due to unfeasible translatability into digital systems. The person-centred perspective, which perceives the person as a whole, is contrasted here with the economic-organisational perspective, which evaluates the person on the basis of risk factors (Becka et al., 2020).

It is crucial that professionals participate in the development, implementation and evaluation of digital tools and software to ensure that the new applications meet their daily work practices (Klinger et al., 2022).

Further training should be linked to the concrete work practice of the professionals and additional time resources should be made available to enable the staff to try out and learn digital tools independently (Klinger et al., 2022).

As a best practice, the project Digibegleiter*innen für Senior*innen - nowa, in which the use of digital tools in care is to be taught, can be cited. In this training series, caregivers can take modules on various digital topics such as technology competence and communication. The aim is to increase caregiver competence in everyday digital topics such as smartphones, tablets, etc.

Personal skills & attitudes

The development of necessary competences for the implementation of digitalisation cannot be reduced to the ability to use new technologies. This would ignore possible dangers of alienation from the target group and the devaluation of acquired qualifications and competences of professionals. Therefore, it is necessary to identify and train relevant competences for the preservation of identity, the use of competences relevant to the profession and the experience of self-efficacy in the digitalised work context (Becka et al., 2020).

The most important personal skills are probably the ability to adapt to change, the ability to work in a team and the willingness to develop personal skills. Curiosity and motivation for personal development is crucial for acquiring digital competences for sharing with and empowering beneficiaries.

In addition to curiosity and willingness to learn about digital technologies, the creativity of the professionals is also important, for example in the adaption and creation of digitalized documents for cognitive exercises for beneficiaries, that should be easy, funny and motivating.

Employees and beneficiaries must be sensitized to the interplay between people and technology and develop an awareness of the importance and benefits of digitalization. It must be clear which needs of beneficiaries and staff need to be met in order to successfully integrate digitalization into their daily interactions.

Possible resistance to digitalization can be countered by communicating the practical benefits and showing how the use of digital tools actually makes work easier (Klinger et al., 2022).

On the part of employees, there is often a fear of replacing human labour.

From the perspective of professionals, the introduction of digital tools can also lead to de-skilling or de-professionalization. This would be the case, for example, if the introduction of work process-related software contributes to the standardisation of work. When work processes and detailed instructions and work steps are prescribed, there is less critical questioning, professional development and change (Becka et al., 2020).

Digital technology should support the health and care sector, but not replace professionals and lead to a deterioration in the quality of life of the beneficiaries (Jannes & Woopen, 2019).

The potentials of digitalisation can therefore only be used if skilled workers acquire not only digital competences but also competences that are useful for assessing the ethical implications of digitalisation on their professional work. These competences should help to reflect on and shape the development and

introduction of digital tools and the accompanying change in operational forms of work and organisation (Becka et al., 2020).

The use of digital applications also raises a number of ethical issues, in particular the protection of dignity and privacy. A trusting interaction relationship with the beneficiaries can be threatened by the use of digital applications if, for example, the contents of the conversation are documented during the conversation. This can alienate the conversation situation and jeopardise trust by making the client assume that information shared will be made available to others (Becka et al., 2020).

Ethical competences in the context of digitalisation include assessment competences, reflexive competences and design competences, which are necessary for the ability of employees to act at all qualification levels in the care and health sector (Becka et al., 2020).

Particularly in ethical terms, the process of digitalisation requires additional competences and qualification measures. Digitalisation reorganises and subdivides work processes, and there is a danger that "overqualifications" will be lost by focusing on the performance of tasks. In the context of using and testing digital tools, competences for the reflexive design of one's own working environment or dealing with technostress are hardly addressed (Becka et al., 2020).

Sensitive handling of digital tools and careful documentation is the basis for a trusting relationship between clients and professionals.

A fundamental challenge of digitalisation is the protection and security of the sensitive data collected and evaluated and the question of whether the self-determination of the target groups can be influenced positively or negatively (Jannes & Woopen, 2019).

A particular ethical challenge here is the protection of privacy through the collection and evaluation of a large amount of sensitive data and partly continuous monitoring with the help of algorithm-based AAL and monitoring systems. The question here is to what extent the beneficiaries like people with functional diversity are aware of the invasion of privacy or can be aware of it due to cognitive limitations, consent or refuse, or can switch off the devices themselves. Security risks through unauthorized access must also be considered. Therefore, professionals need to consider when the benefits of using digital tools outweigh the impact on privacy and security risks (Jannes & Woopen, 2019).

It is therefore crucial to provide learning opportunities on data documentation and data protection in the context of the person-centred approach.

The use of digital applications offers a high potential to strengthen self-determination of the beneficiaries, but also bears the risk of limiting it through comprehensive monitoring and control and of creating a feeling of heteronomy. Informed consent is therefore relevant for the preservation of self-determination, but this includes a comprehensive understanding of the effects of the use of personal data on the part of the target groups. Information in this regard must be able to be communicated in a clear and understandable way, which is an enormous challenge for professionals and often requires the involvement of relatives or legal representatives (Jannes & Woopen, 2019).

Preventing exclusion or discrimination of certain groups of people from and in the use of digital technologies is also a question of social justice. On the one hand, digital applications, e.g., from the field of telemedicine or AAL systems, are associated with high costs and are therefore not equally accessible to all. On the other hand, access to new technologies is also difficult due to a lack of skills, fear and skepticism, which is why appropriate education and training of all stakeholders

(target groups, relatives and professionals) is necessary (Jannes & Woopen, 2019). Critical thinking is also important for professionals. They should be able to evaluate both the benefits and limitations of technical applications for the beneficiaries and the facilitation of work for themselves.

The successful implementation of digital technologies always depends on the acceptance and willingness of the users to use them, which is why the development of new tools must be based on the examination of profession-specific requirements so that solutions are offered that actually meet the needs of the users (Güsken et al., 2021).

Communication & pedagogical skills

The training offered to professionals should include measures that train communication and basic pedagogical skills necessary for the transfer of knowledge and the training of beneficiaries to enable and adequately support them in digital matters.

Professionals need to be able to work with digital communication channels and know which ones are appropriate for others. They should be able to decide which communication channel is appropriate for interacting with beneficiaries. They also need to consider the tension between face-to-face and digital communication channels.

For the appropriate use of communication tools in health and social care, it is advisable to follow professionals on social networks and consult specialized digital magazines and websites (e.g. AAL Competence Network | Your Partner regarding

all AAL questions (aal-competence.com) or https://www.futurehealthlab.at).
To promote networking and willingness to network, it is also helpful to create a supportive network and data collection system for sharing experiences between departments in your entity via common e-learning platforms.

The counselling centre LIFEtool (Home - LIFEtool) can be mentioned as a best practice for training digital communication skills. The counselling centre provides information about electronic and non-electronic aids and special software for people with disabilities in the field of augmentative and alternative communication.

Advanced technical skills

With the growing amount of data in the context of care and support, the importance of knowledge management is also growing. Already in the run-up to the introduction of new technologies, the significance of the collected information for practical work must be asked. It must be clarified how the organisation wants to and is able to deal with the new work processes and the large amount of personal data (Kollewe, 2018). This must also be clearly communicated to the employees.
It is important to educate staff about the benefits of further training in digitalisation and the use of professional documentation technologies and tools for networking. It goes without saying that it is crucial to train caregivers and professionals to facilitate the use of AAL services and promote the use of assistive technologies and virtual reality. Visits to assistive technology showrooms are recommended.

Active Assisted Living (AAL) technologies in particular have great potential to provide support and companionship, especially in care, as they can help people live independently for as long as possible (Kollewe, 2018).

As a best practice, the showroom around assistive technologies SMART AGEING Verein AAL-Zentrum Esther can be mentioned (Der Leichter Leben Raum || Vielfältige Chancen im AAL-Bereich - Smart-Ageing.at). This can be visited and hands-on technologies can be tried out on site using concrete case studies.

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Chapter 6. Tools & assessment procedures

Introduction

The digitalization of the health social care model stands as a transformative force. With technological advancements, innovative tools, and streamlined assessment procedures, this paradigm shift has the potential to revolutionize the way we deliver and receive healthcare services. This chapter explores the essential tools and assessment procedures that play a pivotal role in this digital transformation.

Storage solutions & Cloud

In the digital age, efficient and secure storage solutions are crucial for the digitalization of the health social care model. Cloud storage, such as Dropbox, has become a game-changer in the healthcare industry, offering numerous benefits over traditional storage methods. Cloud storage provides scalable capacity to accommodate the growing volume of healthcare data, ensuring high availability, reliability, and accessibility. It also offers robust data security measures, including encryption and access controls, to protect sensitive healthcare information. Cloud storage facilitates integration with other digital health systems, improving workflow efficiency and eliminating data silos.

Overall, cloud storage plays a vital role in the digital health social care model, enabling seamless collaboration, data sharing, and access to critical information while ensuring data security, compliance, and efficient operations.

Cloud storage services can be integrated as storage solutions in social and healthcare settings to enhance data management, collaboration, and accessibility.

Dropbox is a cloud storage service that provides secure storage and easy access to files, allowing users to store, share, and collaborate on documents, photos, and videos.

Dropbox offers a user-friendly interface and robust features for secure storage and easy access to healthcare data. It facilitates efficient management of patient records, medical images, and documents, ensuring data synchronization across devices.

Dropbox's version control feature enables tracking and management of document revisions, ensuring accuracy and compliance. Integration with popular healthcare applications and platforms enhances workflows and data interoperability.

OneDrive is a cloud storage service by Microsoft that enables users to store, sync, and share files, providing easy access to documents, photos, and other data from various devices.

It offers seamless data synchronization, ensuring up-to-date and consistent information across devices.

OneDrive's version control allows tracking and management of document revisions, maintaining accuracy and compliance. Integration with healthcare applications, EHR systems, telehealth platforms, and communication tools streamlines workflows and improves efficiency.

iCloud is a cloud storage and computing service by Apple that allows users to store and access their files, photos, documents, and other data across multiple devices while providing features for backup, synchronization, and seamless integration with Apple's ecosystem. It ensures data synchronization across Apple devices, enabling easy access to patient records and medical information.

iCloud's collaboration features allow healthcare professionals to share and collaborate on documents and files securely. Integration with Apple's ecosystem provides seamless integration with healthcare apps, enhancing data management and accessibility.

Amazon Drive is a cloud storage service provided by Amazon that allows users to store and access their files, photos, videos, and other data securely in the cloud, with options for easy sharing and backup.

It offers flexible storage options, accommodating the growing volume of digital data in the healthcare industry. Amazon Drive's robust security measures, including encryption and access controls, ensure data privacy and compliance.
Integration with other Amazon Web Services (AWS) tools and services enables advanced data analytics and processing for healthcare applications.

Social Media

Facebook is a social media platform that allows individuals and organizations to create profiles, share content, and connect with others. In the context of health and social care organizations, Facebook provides an avenue for engaging with patients, sharing health-related information, and building a community around a particular healthcare cause or organization.
Some suggestions on how to give some use to Facebook profile:

- Share informative content such as health tips, news updates, and articles related to your organization's specialty.
- Encourage community engagement by responding to comments, messages, and inquiries from patients and followers.

- Utilize Facebook Live to host Q&A sessions, educational webinars, or discussions with healthcare professionals.
- Share patient success stories or testimonials to humanize your organization and build trust.

Instagram is a visual-centric social media platform that allows users to share photos and videos. It is widely used for creative expression, brand promotion, and engaging with a visually-oriented audience. In the health and social care sector, Instagram can be used to educate, inspire, and connect with patients and the broader community.

These are some proposals on how Instagram can be used:

- Share visually appealing and informative content, such as health tips, motivational quotes, and patient stories.
- Utilize Instagram Stories to provide behind-the-scenes glimpses, conduct polls, or share time-sensitive information.
- Engage with your audience by responding to comments, liking and sharing user-generated content, and following relevant accounts.
- Use relevant hashtags to increase the visibility of your content and reach a wider audience.
- Collaborate with influencers or partner with other organizations to expand your reach and credibility.

Twitter is a microblogging platform where users can post short messages, known as tweets, of up to 280 characters. It is a fast-paced platform that facilitates real-time conversations, news sharing, and networking. In health and social care organizations, Twitter can be used to share timely information, engage in discussions, and connect with professionals and patients.

Some of the benefits you can get from Twitter:

- Optimize your profile with a concise and informative bio.
- Share relevant news articles, research findings, and updates related to your organization's field.
- Engage in conversations by using relevant hashtags, responding to tweets, and participating in Twitter chats or discussions.
- Retweet and share content from reputable sources to provide valuable information to your followers.
- Utilize visuals, such as images or infographics, to enhance the engagement and impact of your tweets.
- Monitor your organization's mentions and messages to promptly respond to inquiries or feedback.

LinkedIn is a professional networking platform designed for connecting professionals, sharing industry insights, and fostering business relationships. In the context of health and social care organizations, LinkedIn can be used to connect with industry peers, recruit talent, share thought leadership content, and promote organizational achievements.

Recommendations for getting the most out of your LinkedIn account:

- Provide a comprehensive overview of your services, mission, and values.
- Share industry-specific articles, research papers, and thought leadership content authored by your organization or key staff members.
- Join relevant LinkedIn Groups to engage in discussions with peers, share knowledge, and expand your professional network.
- Post job openings and leverage the platform's recruitment features to attract talented professionals.
- Engage with your followers by responding to comments, endorsing skills of

your colleagues, and sharing updates on organizational milestones or achievements.

- Leverage LinkedIn's advertising capabilities to reach a targeted audience, such as healthcare professionals or potential partners.

It's important to note that while these social media channels can be effective tools for health and social care organizations, it is crucial to adhere to ethical guidelines, patient privacy regulations, and professional conduct when using them.

Sharing information and news related to health care have some risk that always have to be present while spreading the information. The spread of misinformation on social media platforms can lead to confusion and harmful actions as individuals rely on inaccurate or unreliable health information. Sensationalism on these platforms may amplify anxiety and confusion among users by presenting health news in an exaggerated or alarming manner. Relying on social media for self-diagnosis or treatment can be risky, as it may prevent individuals from seeking proper medical advice. Moreover, the overwhelming volume of health-related content on social media makes it challenging to identify reliable information, requiring users to invest significant time and effort in discerning accurate and evidence-based sources.

Communication Tools

Trello is a web-based project management tool that uses boards, lists, and cards to help individuals and teams organize and prioritize tasks. It provides a visual way to track progress, assign responsibilities, and collaborate on projects.

Trello is a versatile tool for Health and Social Care Organizations, enabling care coordination, task management, and team collaboration. It helps track patient progress, prioritize tasks, and facilitate real-time communication among care team members for efficient workflow management.

Asana is a web and mobile application that helps teams manage projects and tasks. It offers features such as task assignment, deadlines, progress tracking, and team communication to enhance collaboration and productivity.

Asana is a powerful tool for Health and Social Care Organizations, enabling efficient care planning, task management, and quality improvement projects. It centralizes communication, tracks progress, and enhances collaboration, ultimately improving patient outcomes and organizational performance.

A **common digital calendar** refers to a shared online calendar that allows multiple individuals or teams to view and manage schedules, appointments, and events in real-time. Examples of common digital calendars include Google Calendar, Microsoft Outlook Calendar, or other calendar applications with shared functionality.

A common digital calendar is a valuable tool for Health and Social Care Organizations, facilitating appointment scheduling for patients, coordinating meetings among team members, and managing shared resources. It optimizes resource allocation, minimizes scheduling conflicts, and enhances communication and collaboration within the organization.

E-signature, short for electronic signature, refers to a digital representation of an individual's handwritten signature. It allows users to sign documents electronically, eliminating the need for physical paperwork and enabling secure and efficient document management.

E-signature technology offers Health and Social Care Organizations the benefits of streamlined consent processes, secure document sharing, improved workflow efficiency, and compliance with regulatory requirements. It enables electronic signing and submission of patient consent forms, facilitates remote collaboration, and ensures the integrity and confidentiality of sensitive documents.

A community manager in the social and healthcare industry is responsible for building and maintaining relationships with community members, patients, caregivers, and stakeholders. They oversee social media platforms, online forums, and other communication channels to engage and support the community, promote health education, address concerns, and facilitate collaboration among different groups. The community manager also plays a crucial role in gathering feedback, monitoring trends, and advocating for the needs and interests of the community within the organization.

Assessment Tools

Healthcare organizations are increasingly relying on digital technologies to streamline operations, enhance patient care, and improve efficiency. To achieve this, they need to assess their current digital technologies by conducting an inventory and evaluating functionality, strengths, weaknesses, and alignment with organizational goals. A gap analysis helps identify limitations and explore emerging technologies that can address these gaps. Prioritizing requirements and developing a roadmap for implementation or upgrades is crucial.

Data organization, utilization, security, and integration are critical for efficient data management, patient privacy, and seamless integration across systems. It is

important to assess data organization, improve utilization, and enhance data capture to derive meaningful insights for decision-making. Data security measures must be evaluated, and robust cybersecurity practices implemented to protect patient data. Privacy concerns should be addressed through compliance with regulations like GDPR.

Data integration needs should be reviewed, and interoperability solutions explored to enable smooth data exchange and care coordination. Collaboration and data sharing among healthcare providers and researchers should be fostered. Continuous monitoring and improvement are essential, involving the establishment of a data governance framework, monitoring data quality, and staying informed about emerging trends to enhance data management practices and drive innovation in healthcare delivery.

By focusing on assessing capabilities, reviewing data needs, and optimizing their digital ecosystem, healthcare organizations can support efficient workflows, improve patient care, and make data-driven decisions while ensuring alignment with organizational goals, enhancing data security and privacy, and fostering collaboration and interoperability.

There are some **data management platforms** specifically designed for social and healthcare organizations.

Orion Health provides a range of data management solutions for healthcare organizations, including population health management, interoperability, and analytics platforms. Their solutions focus on securely aggregating and analyzing health data to support care coordination and improve outcomes.

Cerner offers data management platforms that are widely used in European healthcare systems. Their solutions include electronic health records (EHRs), population health management tools, and interoperability platforms, allowing for seamless data exchange and comprehensive care management.

Dedalus Group provides a variety of data management solutions for healthcare organizations across Europe. Their platforms include EHR systems, care coordination tools, and analytics solutions, aiming to optimize workflows, improve data sharing, and enhance patient care.

Agfa HealthCare offers a range of data management solutions for healthcare providers in the European Union. Their platforms include EHR systems, radiology information systems (RIS), and enterprise imaging solutions, enabling efficient data capture, storage, and retrieval across different healthcare domains.
Organizations often choose data management platforms based on their specific needs, regulatory requirements, and compatibility with existing systems.

Some of the available platforms offer the possibility for final users to access their health data, such as the "eHealth National Catalogue" which provides information on eHealth services available in Spain, and "My Health Folder" which allows citizens to access their health records online, The "ELGA" (Elektronische Gesundheitsakte) platform is a national electronic health record system that enables patients and healthcare providers to access and share health information securely, The "eHealth Romania" platform provides citizens with access to their medical records and prescription information, The "National Health Portal" is a platform that provides citizens with access to health-related information and services.

Teleconference platforms

Video conference platforms have become increasingly relevant and important in health and social care services, facilitating remote communication, collaboration, and care delivery. They enable real-time audio and video interactions between healthcare professionals, patients, caregivers, and other stakeholders, regardless of their physical locations.

Zoom is a cloud-based video conferencing platform that allows individuals and groups to connect and collaborate through high-quality audio and video communication.

Zoom is a versatile platform for healthcare professionals, offering remote consultations with patients, fostering collaboration among specialists, and facilitating virtual training and conferences. It promotes accessible healthcare, enhances interdisciplinary teamwork, and supports continuous learning in the industry.

Microsoft Teams is a collaborative platform that integrates chat, video meetings, file storage, and application integration into a unified communication hub.
Microsoft Teams is a comprehensive platform that enables seamless communication and collaboration among care teams, supporting real-time messaging, video calls, and file sharing. It facilitates remote training sessions, virtual meetings, and integrates with other Microsoft Office applications for secure document collaboration in healthcare organizations, promoting efficient care coordination and knowledge sharing.

Cisco Webex is a video conferencing and collaboration platform that offers audio and video meetings, team messaging, screen sharing, and file sharing capabilities. Cisco Webex is a versatile platform that supports telemedicine services, allowing healthcare professionals to provide virtual consultations and monitor patients remotely, improving access to care. It facilitates multidisciplinary team meetings, promoting collaboration and shared decision-making for complex cases. Webex also offers features for hosting webinars and virtual conferences, enabling healthcare organizations to deliver training programs and share knowledge with a broader audience.

Skype is a widely used communication platform that offers audio and video calling, messaging, and file sharing capabilities over the internet.

Skype is a versatile platform that enables healthcare professionals to conduct remote consultations, improving access to care and facilitating visual assessments. It also serves as a valuable tool for connecting caregivers with healthcare professionals, enhancing their ability to provide care and seek guidance. Additionally, Skype can be used for language interpretation services, ensuring effective communication with patients who have limited language proficiency.

FaceTime is a video and audio calling service exclusive to Apple devices, enabling users to have real-time conversations with other Apple users.

FaceTime, available on Apple devices, enables direct video communication between healthcare providers and patients, improving accessibility and convenience of care. It can be used for remote monitoring, allowing providers to assess conditions and offer guidance. FaceTime also facilitates patient-family connections, reducing social isolation and providing emotional support in long-term care or restricted visitation situations.

Messenger is a messaging platform owned by Facebook that enables users to send text messages, make voice and video calls, and share media files.

Messenger serves as a communication tool for healthcare providers and patients, enabling text, voice, and video conversations for discussing health concerns and sharing updates. It can be used to send appointment reminders and notifications, improving patient engagement and reducing missed appointments. Messenger also supports the dissemination of health education materials and informative articles, ensuring the widespread distribution of accurate and timely health information.

Google Meet is a video conferencing platform developed by Google. It allows users to host and join virtual meetings, conduct video calls, and collaborate remotely. It offers features such as screen sharing, chat, and real-time captioning. Google Meet has become an essential tool for healthcare professionals, social workers, and care providers in delivering telehealth services and facilitating remote consultations. It enables virtual doctor-patient interactions, telemedicine appointments, and therapy sessions, ensuring continuity of care and reducing the need for in-person visits. Google Meet also supports multidisciplinary team meetings, enabling healthcare professionals from different specialties to collaborate, discuss patient cases, and coordinate care plans efficiently.

Jitsi is an open-source video conferencing platform that provides secure and encrypted communication channels for online meetings and video calls. It offers features such as screen sharing, end-to-end encryption, and the ability to host conferences without requiring user accounts.

Jitsi has gained relevance in health and social care services due to its focus on privacy and security. It is used by healthcare organizations and social care providers

to conduct confidential discussions, share sensitive information, and ensure compliance with data protection regulations. Jitsi's open-source nature allows for customization and integration with existing healthcare systems, making it a flexible and cost-effective solution for telehealth consultations, virtual meetings, and remote collaboration.

Other helpful tools

Health Information Exchange (HIE) Platforms facilitate the secure exchange of patient health information between healthcare providers, ensuring seamless continuity of care and reducing duplication of tests or procedures.

Patient portals are secure online platforms that allow patients to access their health records, test results, appointment schedules, and communicate with their healthcare providers.

Digital Prescription Management Systems enable healthcare professionals to electronically prescribe medications to patients and transmit prescriptions to pharmacies.

Remote monitoring devices, such as blood pressure monitors, glucometers, or wearable sensors, can collect patient data outside of traditional healthcare settings. Data Privacy and Security Solutions: With the increasing digitalization of health data, robust data privacy and security solutions are essential.

Health Apps and Digital Therapeutics: There is a wide range of health apps and digital therapeutics available that offer personalized interventions, behavioral support, and self-management tools for various health conditions.

U-DIGITALIZE

U-Digitalize Model

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