

DOCTORAL SUMMARY

entitled: "The concept of IT solutions aimed at reducing the digital exclusion of people with disabilities in Poland".

More and more people living in Poland are disabled people. In order to counteract their social and economic exclusion, the skills of using ICT should be developed and the use of IT solutions dedicated to disabled people should be developed. ICT is not used by these people due to the lack of digital competences. In the doctoral dissertation, digital exclusion of people with disabilities was undertaken. Disabled people face not only architectural barriers in their lives, but also barriers related to new technologies.

This work contains the concept of using IT solutions for people with disabilities in Poland. People with disabilities constitute a large social group with great economic potential, provided that appropriate solutions are guaranteed. Decisions improving the situation of people with disabilities in Poland have been observed since 2017.

The developed concept serves to increase the digital competences of people with disabilities and has a systemic and institutional character. The conducted research on the level of digital competences shows that among a significant part of the digitally excluded society there are people with disabilities, who therefore experience not only social exclusion, but above all economic exclusion. Digital exclusion is increasing the scale of social and economic exclusion of people with disabilities. The importance of digital exclusion is underestimated. Therefore, there was an urgent need to develop a model aimed at reducing the digital exclusion of people with disabilities in Poland, which is still missing.

In the course of carrying out his own research, the author selected three main research methods: "*Design Science*", "*Action Research*" and "*Case Study Research*". In addition to the above-mentioned methods, supplementary research methods were also used to achieve the main goal of the work, partial goals and to verify research hypotheses, e.g. methodology of object-oriented modeling of information systems along with the scenario method (case method), RUP (*Rational Unified Process*) methodology and UML (*Unified Modeling Language*); a critical analysis of Polish and foreign literature, reflecting the aspects of using ICT in social and economic life; analysis of the legal regulations for the situation of disabled people in social and economic life in Poland and the European Union, with particular emphasis on professional activity and key digital competences.

The main goal of this dissertation is to develop a model that meets the rehabilitation and IT needs of disabled people, their potential employers and specialized ICT occupational therapy centers. This goal covers three different perspectives of digital exclusion. It required the implementation of three partial objectives, i.e. the use of the digital competence framework to shape the skills of people with disabilities in the field of ICT applications for at least 3 selected out of 9 areas of life, the development of rules of employing people with disabilities in accordance with the scenario of mutual benefits and skills in ICT application for employers, developing a model of a network of ICT competence centers prepared to reduce the digital exclusion of people with disabilities, in particular a properly completed and configured ICT infrastructure. The implementation of the main goal and partial goals was accompanied by a positive verification of the research theses.

The work includes the results of the analysis of the position of disabled people in social and economic life, the characteristics of professional activity of disabled people and the importance of this social group from the point of view of social and human capital. The exclusion of disabled people from social and economic life was presented, with particular emphasis on digital exclusion. This made possible to define the framework of digital competences for people with disabilities, preventing digital exclusion from professional activity. A survey of Occupational Therapy Workshops with computer labs was carried out using a questionnaire. The study was conducted in two stages, i.e. in the form of pilot studies and as complete studies in the context of shaping ICT competences. Research shows that computer labs are not suitably prepared to develop digital skills of people with disabilities.

The dissertation contains the results of own and international research on information technologies supporting people with disabilities, and in particular on a large group of commercial market offers in the field of ICT infrastructure (computer hardware, software, network), adapted to the types of disability. The main concepts of IT solutions and assistive technologies have been systematized and the results of identifying information and communication technologies that enable disabled people to acquire the necessary digital competences and functioning in a dignified manner in social and economic life have been presented. Database and knowledge base designs for selected IT solutions were developed along with a prototype implementation of these projects for over 100 solutions. These projects constitute the basis for the functioning of the concept aimed at reducing the digital exclusion of people with disabilities.

The proprietary concept serves to counteract digital exclusion, the essence of which is an institutional solution for a nationwide network of ICT competence centers, dedicated to adults with disabilities, in particular in working age. The model of the ICT competence center for people with disabilities includes the infrastructure, effectiveness criteria, the IT system model and selected aspects of managing the implementation and execution of the model in Poland. The model is built on the UML graphic design language scheme. The model consists of the following main components: standards diagrams according to digital competence areas in the EU and tables of requirements standards separately for each proficiency level; functional model diagram for digitization-related areas of life covering all areas of life; graphs of the benefits of digitizing each area of life; skill diagrams needed to achieve each benefit of digital competence within different areas of life; learning outcomes and syllabuses for people with disabilities; scenarios of behavior of disabled people using the model. The final part of the dissertation presents the results of the analysis of the functioning model's impact on reducing the number of digitally excluded disabled people. The model was initially verified through close contact with future users. The environment of people with disabilities was interested in the shape and functionality of the model.

The dynamic approach to the model provides opportunities for continuous improvement and updating in line with the development of ICT technology and medical experience in individual categories and types of disability. As a result of changes with a fixed horizon, but at least one year, new versions of the model should be created, i.e. the 2022 perspective, the 2023 perspective, etc. The model is a unique conceptual solution, strictly aimed at reducing the digital exclusion of people with disabilities in Poland.

KEYWORDS

social and economic potential of people with disabilities,
digital exclusion of people with disabilities,
the ECCC digital competence framework,
digital competences of people with disabilities,
IT solutions for people with disabilities,
concept of reducing digital exclusion of people with disabilities