DiHECO – Digital healthcare ecosystem research and networking

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Abstract

The DiHECO project aims at studying the role and potential of digital healthcare platforms in the European, mostly publicly arranged, healthcare service ecosystem. The project, divided into a few subprojects, tries to identify areas of research that can grow into impactful larger European projects with industry co-operation. DiHECO aims also at further developing the capacity of participants, particularly the Kaunas University of Technology, to perform relevant research in this area. In its first year, the project has made progress according to plan through joint research activities and networking events. These include the digital health tracks of the researcher and industry forum of the ICTE 2021 conference and two grant writing workshops and a scientific writing workshop.

Keywords: health economics, computer systems, telemedicine, medical informatics, consumer health informatics

Introduction

Although electronic health records have existed for decades, the uptake of digital health services has intensified during the recent COVID-19 pandemic. There is a variety of methods of delivering healthcare services with the assistance of digital technology. In other sectors of society, digital platform services have been successful, and have sometimes partially ousted traditional services. For this reason, the DiHECO project [1], coordinated by the School of Economics and Business in the Kaunas University of Technology (KTU) in Lithuania, studies the possibilities of digital healthcare platforms to contribute to the healthcare services business.

There are different opinions on what is meant with a "digital platform service". Until the definition of the "digital platform service" is completed in the ISO-IEC/JTC1 cloud computing taxonomy for digital platforms project ISO/IEC TS 5928 [2], alternative definitions are needed. Gartner's definition is: "A platform is a product that serves or enables other products or services" [3]. Stephen Watts has a more detailed definition: "a digital platform can be

thought of as the sum total of a place for exchanges of information, goods, or services to occur between producers and consumers as well as the community that interacts with said platform" [4]. When the word "health" is inserted into proper places in the latter definition, it becomes quite close to what DiHECO means with the digital health platform. The DiHECO idea is different from the idea in the joint WHO and International Telecommunication Union (ITU) report of digital health platforms which are the backbones of national digital health infrastructures [5]. In DiHECO's view, the multi-sided platform (MSP) of digital healthcare services is a digital ecosystem for organizing collaboration and control based on software, hardware, and services, without taking ownership of the services whose exchanges it facilitates through diverse inter-organizational interactions. In this way, an MSP creates an effect of shared economy and thus greater accessibility, affordability, security, and quality of life.

As digital health platforms have not existed for a very long time yet, the literature about them is also rather new. Fürstenau et al. [6] developed a conceptual framework of MSP design and management. They made a detailed longitudinal case study of the development of a MSP, the Healthcare Services Platform Consortium (HSPC) in USA to apply this framework. Rudolf Fisher investigated the role of the health platforms as introducers of innovations to health care [7]. Benedict and Schlieter shared their experiences in the development of a telehealth platform project in Eastern Saxony in Germany as governance guidelines for digital healthcare ecosystems [8].

In addition to performing research on digital health platforms, another objective of the EU Horizon 2020 Twinning project DiHECO is to build the capacities for KTU to conduct high-quality research in the field of digital healthcare management [1]. This is accomplished by networking with the other universities in the project consortium working in the nearby areas as KTU.

Material and methods

The work in the DiHECO project is organized in five substance work packages and work packages for dissemination and administration. The duration of the project is from December 2020 to November 2023. The project has an advisory board consisting of experts from industry and academia.

The work package 1, Experience based learning, aims at developing researcher skills through carrying out high-quality research and innovation initiatives in the field of multi-sided platforms of digital healthcare services. In practice, this means real-life problem based interdisciplinary small research and innovation projects on digital healthcare multi-sided platforms led by different partners of the project consortium. This also includes the improvement of research paper writing skills.

The work package 2, Network development and grant applications, attempts to get connected with the top actors of the field particularly in Europe. The idea is to identify the relevant and up-to-date research topics that can have impact on the society. The work package also includes the improvement of the international grant writing skills of the consortium.

The work package 3, Research and innovation management and administration unit set-up, studies how different universities have organized the support functions of international research projects. The main aim is to adjust these support functions to a good international level in KTU.

The work package 4, Links with industry, aims at improving industry-academia co-operation in the chosen field of research. In addition to obtaining industry-relevant research topics, the purpose is also to transfer results to the industry.

The work package 5, Early-stage research careers and gender equality, aims to build capacities for offering better career prospects to early-stage researchers and improve gender equality. It can include mobility of the early-stage researchers within the project consortium.

A lot of the work is carried out in a series of meetings and other interactions. The ongoing pandemic situation has converted many of the intended face-to-face events into online events.

Results

In its first year, the project consortium has collected its joint vision of the development of the field into a "concept paper". This paper, submitted for review, contains the explanations of the central concepts in digital healthcare platforms and discussion about the particularities of the platforms intended to produce social purpose benefits instead of monetary profits like many other commercial platforms. It also contains examples of digital healthcare platforms from the home countries of the consortium partners thus giving European perspective to the digital healthcare platform discussion.

DiHECO organized the track "Digital healthcare innovations" in the virtual conference 2021 International Conference on Technology and Entrepreneurship [9]. To seek closer collaboration with the industry, the project arranged a panel discussion "How to Produce and Realize Value in Digital Healthcare Platforms" in the industry forum of the conference.

In addition to monthly administrative and idea exchange meetings, the project has arranged two workshops about European grant writing. In these workshops, experienced researchers and grant application support experts have disseminated their experiences and learnings to the project participants. The workshops have also included sessions in which new project ideas have been developed.

In February 2022, as the pandemic situation allowed, the project was able to arrange its first face-to-face event, the workshop on scientific publication procedures. In addition to expert presentations about different aspects of scientific publication, the graduate students were given the opportunity to get feedback about their draft papers from senior colleagues in the workshop.

The project has started ten small scale subprojects divided into three areas: business model innovations in healthcare MSPs, data and its governance and values created by the MSPs. Some of the subprojects can merge if that is considered expedient. Each subproject is expected to produce a publication as its result.

Discussion

Although digital healthcare platforms have potential and investments in them are increasing [10] there are still factors that can limit their success. For example, while the food delivery, taxi and travel services are open for enterprises to set their own rules of the business, the healthcare sector is typically highly regulated, the data can be complex, and the data protection rules do not allow the exploitation of the stored data as freely as in other industries. The closure of the Microsoft Health Vault service in the year 2019 [11] can be related to these issues despite the resources the company would have had to develop the service

further. Additionally, in countries where the public sector is taking care of most of the health care services, it is unlikely that it can assign a major share of the services under the control of a private sector platform. These issues require consideration in the DiHECO small scale projects.

DiHECO has already achieved many of its goals at the time of writing. The work continues along the lines of the grant agreement. The small-scale projects are hoped to generate ideas which can grow into large scale projects which can apply funding when a suitable Horizon Europe [12] funding call opens.

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Conflict of interest statement

The authors are researchers in the project that is described here but they have no conflicts of interests with the producers of the equipment or producers of the data used in this study.

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