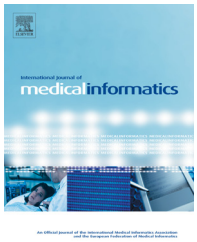
INTERNATIONAL JOURNAL OF MEDICAL INFORMATICS 82 (2013) 922–939

journal homepage: www.ijmijournal.com



Collective action for a common service platform for independent living services

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ARTICLE INFO

Article history:
Received 25 November 2012
Received in revised form
25 June 2013
Accepted 26 June 2013

Keywords:
Independent living
Home care services
Information systems
Collaboration
Incentives
Leadership

ABSTRACT

Objective: The paper aims to explain how and why organizations, providing assistive devices and related web services for elderly independent living services, might be willing to collaborate and to share their resources and data on a common service platform.
Method: A theoretical framework from literature on collective action theory, platform and business ecosystem concepts was developed to explain what factors influence inter-organizational collective action for a common service platform. The framework was tested in a case study of collaborative platform project for independent living services in Finland. Semi-structured interviews with the project managers and the decision makers of involved organizations were the primary source of data collection.
Result: Strikingly, interdependency among the organizations was not found to be important for collaboration in this case. Instead, we found that a central organization can play an important role in initiating, facilitating and encouraging collaboration among different parties. Moreover, we found more willingness for collaboration when the platform is aimed to be open to third-parties to complement the platform with additional services.
Conclusions: Strategies of the platform leader and openness of the platform towards third parties are the most important drivers for collective action between organizations offering independent living services. Establishing common service platforms for independent living services requires explicit attention to these inter-organizational issues.

1. Introduction

As the ageing population is growing across the world [1], there will be more elderly people demanding care services. Therefore, innovative healthcare solutions are required to not only provide elderly care services with less cost but also to improve the quality of life for elderly people [2]. Currently, several assistive device providers are developing products with related web services, each addressing a niche in the market, enabling elderly people to live independently and service providers to reduce costs. Examples of such assistive devices are watches, necklaces or sensors that are used for remote medical or safety monitoring as well as emergency alarming [3]. Several studies discuss how such technologies can facilitate independent living services for elderly people (with different health conditions) and support care givers in providing the services and saving costs [e.g. 4–7]. Many scholars also explore acceptance aspects of assistive technologies by elderly people and care service providers [e.g. 8,9]. The main problem though with existing technologies and devices is that they often run on different non-interoperable service platforms [10]. This makes it difficult for care service providers to share data and to bundle services and products from different device providers. The

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1386-5056/$ – see front matter
http://dx.doi.org/10.1016/j.ijmedinf.2013.06.013

fragmented nature of the market also increases the time and costs to develop and implement new services.

The fragmentation in the independent living market could be reduced massively if providers of assistive devices and care service providers would collaborate and jointly develop common service platforms for their service offerings. Such a common service platform should give care service providers a standard interface to connect to multiple assistive devices as well as customers' data. Service platforms have been extensively studied, especially regarding strategies of platform providers in opening up a platform or business ecosystems to third-parties [e.g. 11–15]. However, existing studies do not consider how multiple organizations can jointly set up and commercialize a common platform. Collaboration for a common service platform involves challenges, such as lack of trust among parties [16] and challenges to align business models and business processes [17].

The aim of this paper is to study what factors influence inter-organizational collaboration in the context of establishing common service platforms for independent living services. Setting up a common service platform can be considered as a collective action problem since (1) it requires several organizations to collaborate to *realize a common goal* [18,19], i.e. to establish a common service platform; (2) the common goal cannot be achieved individually [20], as current individual approaches cannot provide a holistic solution for elderly independent living. While collective action theory has been widely applied to study collaboration in different fields [e.g. 21–25], the principles of the theory have hardly been applied to study inter-organizational collaboration in the context of platforms [Exceptions: 26,27].

By connecting insights from collective action theory with literature on platforms and business ecosystems, we develop a theoretical framework with a set of factors that influence collective action for joint platform development. To test this framework, we conduct a case study on a project in Finland, which aims to enable offering a combination of independent living services for elderly on a common service platform. As collaboration for common independent living service platforms rarely takes place in today's market [28], this case is intrinsically important to study.

The paper proceeds as follows. Section 2 presents the theoretical framework with a set of factors influencing collective action. Section 3 provides the case study design. The results are presented in Section 4. Finally, findings are discussed and conclusions are drawn in Section 5.

2. Theoretical framework

In this section, we provide an overview of literature on collective action theory, platforms and business ecosystems concepts to identify factors influencing collective action for common service platform development.

Collective action theory, first developed by Olson [29], is used to explain how groups of individuals may collaborate for a common goal even if the incentives to do so are smaller than not collaborating. According to Olson, the dilemma of collective action is that when benefits of the common goal cannot be excluded from non-contributors, rational individuals will not contribute to the common goal and they tend to free-ride on contributions of others. Concepts like critical mass, group size, network structure, motivations and selective incentives have been studied, in different contexts of economics, social and political sciences, to explain why collective action arises in one group and not in another group [For example see: 30–35]. The theory has been also applied in studying management of natural resources (referred to as common pool resources), in which several individuals need to collaborate for utilizing a common natural resource (e.g. a grazing land for cows) and preventing overexploitation (i.e. the free-rider dilemma) [For example see: 36,37]. In this research, however, we mainly borrow insights from studies on collective action in social and economics contexts.

In the ICT domain, *platforms* are increasingly used to provide generic functionality on which a range of services may run [38]. Popular examples include smartphones, tablets, operating systems, application stores, and service portals. What all platforms have in common is that they mediate interactions between two or more groups of organizations, typically the service providers on the one side and the service consumers on the other [15,39,40].

The networks of organizations which are collaborating and competing around a technology are often referred to as *business ecosystems*. The concept, which was first introduced by Moore [41], is increasingly used to analyze inter-organizational networks in high-tech industries (e.g. computer and mobile industries). Business ecosystems exhibit dynamic characteristics in which companies, their roles and the structure of business ecosystems may change over the time [42]. In this paper we refer to organizations collaborating around a platform as the 'platform ecosystem'.

2.1. Platform openness

The first factor we consider to have an effect on the likelihood of collective action is platform openness. Platforms may be fully open towards third party service providers but often there are restrictions to who can offer services on the platform and who not. Given the diversity between rather closed strategies from platform providers like Apple and Microsoft and more open strategies from providers like Google, fierce debate has emerged as to how open a platform should be to foster collaboration. The platform openness can be seen from two perspectives. From a *technical perspective*, a platform is considered open if it provides the technical means for complementary providers (i.e. companies that provide alternative technology, products or services for the platform) to access the core functions of the platform, for instance through open APIs (Application Programming Interface) or SDKs (Software Developers Kits) [43]. From *an organizational perspective*, platform openness implies to what extent complementary providers are allowed to participate in the development, commercialization and usage of the platform [13]. Organizational openness may be reduced by platform providers through setting up rules and contracts on which players and services are allowed to be offered on the platform. How open or closed a platform is technologically and organizationally is critical for the growth and sustainability of the platform [44]. Keeping a platform closed helps platform providers to preserve