Decision support system for the fair distribution of efficiency gains in the AAL sector

J. Bleja, S. Neumann, U. Grossmann

Purpose The future viability of products and services increasingly depends on stable networks of cooperation partners (Solaimani et al., 2018; Osl et al., 2008). For example, products and services in the field of age appropriate assisting systems (AAL) require particularly extensive expertise that is not available or only available to a limited extent in a single company (Ganz et al., 2016). In the Smart Care Service project, funded by the EU and the state of North Rhine-Westphalia, partners from different sectors cooperate to ensure that people with needs of assistance are connected with appropriate service providers and products (Smart Care Service, 2022). In addition to a multitude of benefits that can arise from collaboration, it also brings challenges. One of these is the conception of collaborative business models by which the economic advantages resulting from the collaboration can be fairly shared among the cooperation partners. The purpose of the study was to evaluate approaches to the fair distribution of efficiency gains in innovation networks in the health and care sector. Based on these findings, a first draft for a decision support system was to be developed. **Method** Before developing a decision support system, an evaluation of game-theoretic solution concepts, such as the Shapley value, τ-value, χ-value, Kern and the ACA method for the fair distribution of efficiency gains, was carried out. First, an extensive literature review was conducted to identify theoretical and conceptual requirements for a solution concept. With the help of the PROMETHEE method, an evaluation of the solution concepts was conducted. Due to the considerable lack of knowledge regarding the conditions that must be present for a decision support system to be accepted in operational practice, a qualitative analysis of requirements from the perspective of potential users from the AAL-sector was carried out. With guideline-supported expert interviews, ideas from potential users about a decision support system that would be helpful for them were collected. **Results and Discussion** Based on the requirements analysis, it was possible to generate a catalogue of model requirements for game-theoretic approaches to solving the distribution problem and additional practicality requirements for the decision support system to be developed. The results of PROMETHEE also provide an overview of the extent to which the individual game-theoretic methods fulfil the identified requirements. Additionally, the interviewees clarified the need for a corresponding decision support system in practice. Furthermore, various experts repeatedly expressed the wish to have a transparent guideline of the decision support system on how to operationalize and distribute efficiency gains in the context of innovation networks in the AAL-sector. This should contain individual steps and decisions to be taken within the framework of the cooperation and guide the cooperation partners through the distribution process. Therefore, based on the results, a first draft of a decision support system operationalizing and distributing efficiency gains was developed. This serves as an important basis for discussion and can support cooperation partners in dealing with the aspect of fair distribution of efficiency gains at an early stage.

References

Ganz, W., Kramer J., Rößner A., Eymann T. & Völkl A. (2016): Entwicklung von Geschäftsmodellen für Dienstleistungsnetzwerke im Gesundheitsbereich, in: Pfannstiel M. A., Rasche C., Mehlich H., Dienstleistungsmanagement im Krankenhaus – Nachhaltige Wertgenerierung jenseits der operativen Exzellenz, Springer Gabler, S.25-46.

Osl, P.; Sassen, E. & Österle, H. (2008): A Guideline for the Design of Collaborative Business Models in the Field of Ambient Assisted Living, 1. Deutscher Kongress Ambient Assisted Living (AAL), Berlin.

Smart Care Service (2022), available from https://www.smartcareservice.de/.

Solaimani, S.; Heikkilä, M. & Bouwman, H. (2018): Business Model Implementation within Networked Enterprises: A Case Study on a Finnish Pharmaceutical Project, in: European Management Review 15, 1, S. 79-96.

Address: Dortmund University of Applied Sciences and Arts, IDiAL, Emil-Figge-Straße 44, 44227 Dortmund, Germany
Email: Jelena.bleja@fh-dortmund.de