

Viability template – a practical tool for assessing viability of transformative service innovations in health care context

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The paper develops and showcases the viability template which is designed to assess the innovation potential of transformative service ideas. Based on the transformative service research and innovation literature, we highlight the importance of novel simplifying technology, supporting value networks, cost-effective business models, and regulatory environment which enable renewal of the prevailing market practices. We operationalize the template as a set of questions and assess the innovation potential of three pilot cases on new transformative services. The pilot cases present technologies that aim to develop and spread the usage of user-friendly electronic health care services in Finland.

1. Introduction

Transformative service research (TSR) combines transformative consumer research with service research in order to inform how to improve the consumer and societal well-being. So far, the emerging field has not paid particular interest in transformative service innovations, which we define as the evolutionary process whereby organizations or individuals transform new, useful knowledge, in order to advance well-being in the service ecosystem. In fact, most of the empirical studies on innovation in health care focus on idea generation rather than dissemination (Lämsä, Kivimäki, Aalto, & Ruoranen, 2006). There is a dearth of research in innovation in public health services that discusses the role of institutions in dispersion of service idea to service innovation. This stands in contrast with strong focus on practices and existing institutions that otherwise characterize the industry. Often the overall improvements in health care services are based on an intertwined set of different types of innovation: product, process, organizational and market innovations (Windrum & García-Goñi, 2008). The consumer well-being is usually most apparent in product innovations in e.g. new medical technologies. The direct well-being effects of the other innovation types are more vaguely observed. Due to many interconnections and needs for proof of concept, transformative service innovations in health care are challenging to implement.

We acknowledge that there is an abundance of seemingly good ideas that suggest how technology or process reconfigurations could be employed to increase well-being in health care context. Nevertheless, before these ideas can be referred as transformative service innovations, they need to be accepted and adopted in parallel by multiple stakeholders, such as service provider's management and employees, service purchasers, authorities

and service users, or consumers. And then they need to be diffused through market practices by institutionally embedded actors. These practices may be in line with the original plan for value proposition or stemming from unforeseen stakeholder activities.

The objective of this study is to increase understanding on institutionalization in transformative service innovation processes in the context of health care. Furthermore, the study aims at building up a template for analyzing the different extents of viability of transformative service innovations. By viability we refer to the transformative service innovation which 1) includes a novel idea that can be deployed into practices that increase well-being in service ecosystem, 2) is accepted and adopted by different stakeholders and 3) has suitable features to attract diffusion in its innovation and stakeholder networks. We build on TSR, innovation literature and institutionalization processes to understand how disruptive ideas spread to advance consumer and societal well-being. We operationalize a viability template that can be employed to assess the viability of potential transformative service innovations. In the empirical part, we showcase the developed viability template by assessing three potential innovations in health care context that aim at improving well-being through increased efficiency and empowerment of patients. In addition to showing how the template was used in evaluating the viability of these cases, we discuss how the template could be developed further.

2. Theoretical background

2.1. Transformative service research

Anderson et al. (2011, p. 3) define TSR as “the integration of consumer and service research that centers on creating uplifting changes and improvements in the well-being of consumer entities: individuals (consumers and employees), communities and the ecosystem.” TSR focuses on the socially oriented contexts such as health care and education, in which the nature of service speaks to consumer’s and society’s well-being. Instead of focusing merely on customer satisfaction and loyalty, this emerging area pays attention to the effects on well-being of multiple stakeholders.

Research on consumer behavior has paid attention to health for long. For instance, Neergaard and Irvine (1989) conducted a study on underlying motivations, factors, and processes involved in family management of well-being. Since then, the health care-related consumer studies have expanded to cover, for instance, electronic word-of-mouth on health social networking sites (Liang & Scammon, 2011), men’s behavior as health consumers (Buckley & Tuama, 2010), and the choice of non-conventional treatments (Rajamma & Pelton, 2010). Despite health care consumption has been approached from various directions, there is surprisingly little research on health care innovations in consumer research. As a notable exception, Caldwell and Kleppe (2010) studied the role of early adopters in the diffusion of health care innovations. They underscore that public demonstration by early adopters reduces consumer resistance to HIV/AIDS public health innovations.

Similarly, service research has mostly neglected health care innovations. However the readiness of both health service providers (Okazaki & Castañeda, 2013) and patients (Lanseng & Andreassen, 2007) in adopting new technologies have been taken into

account. Lanseng and Andreassen (2007) focus on early adopters and their expectations of the technology. Similarly, Okazaki et al. (2013) focus on perceptions of the technology as well as personal characteristics of the physicians. Heikkilä et al. (2014), in turn, analyse the feasibility of a health service innovation and its business model from both the provider network's and pilot customer's point of view, and Nikayn et al. (2014) discuss its social implications. Although these studies increase our understanding of the behavior of pioneers in adapting health care innovations, they are limited in terms of raising awareness of the institutionalization of health care innovations into market practices.

The importance of institutionalization is particularly discussed within the service ecosystems approach (Vargo & Akaka, 2012; Vargo & Lusch, 2011). In service ecosystems approach, actors are perceived as being embedded in social context in which they integrate resources to increase their own well-being. In other words, value is always co-created with multiple stakeholders in context. As actors are embedded in social structures, it is perceived that institutions both enable and constrain value creation and the adoption of new practices. Although health care practices have been studied with service ecosystems approach (McColl-Kennedy, Vargo, Dagger, Sweeney, & Kasteren, 2012), it remains unknown how institutionalization of these practices occurs. Particularly, this is an important question in the health care innovation setting that introduces new or changed practices.

2.2. Innovation

Innovation is considered as a multi-stage process whereby organizations transform ideas into new/improved products, service or processes (Thompson, 1965), in order to advance, compete and differentiate themselves successfully in their marketplace (Baregheh et al, 2009). Conventionally, innovation is defined as "the process of bringing new products and services to market" (Hauser, Tellis, & Griffin, 2006, p. 687). In other words, innovation is expected to substitute existing solutions.

A recent view in marketing perceives markets as institutions (Araujo, 2007). As a result, it is understood that innovation is not only about new or improved products and services but something that is different in the market, i.e. institutional framework. Marketing can enable the maintenance of the institutional framework or destabilize it, for instance through introduction of innovations. Therefore, it is important to understand "when are markets ready for disruptive innovations" (Klenner, Hüsigg, & Dowling, 2013). Disruptive innovations were typically conceptualized as lower quality solutions that eventually gain market share from established companies (Christensen, 1997). In brief, the solution needs to be affordable, simple, and substitutive. In addition, the market leader's solution needs to be more than good enough, and the disruptor needs to be able to design a novel business model (Christensen, Johnson and Rigby, 2002). The other type of disruptive innovation, "new-market disruption", takes place when the (existing) solution in one market can be brought to a new market and serve customers' needs not served by the existing incumbents. Again this requires that the business logic around the existing technological solution is redesigned to fit the new market.

There is a rich literature on innovation diffusion. Following Rogers (2003) innovation diffusion process comprehends the adoption processes across several individuals over time. But, in many instances, also in health care, adoption and diffusion occur among organizations shaped by their structures and hierarchies. Slow diffusion of innovations is

acknowledged in health care. Diffusion of innovations in healthcare in particular require credible evidence base, observability, strong leadership and trust (Berwick 2003) and it also requires strong social interactions between professional groups and suitable organizational contexts (Fitzgerald, Ferlie, Wood, & Hawkins, 2002).

The review of empirical studies on the assimilation of technologies in health care by Robert, Greenhalgh, MacFarlane and Peacock (2010) points out the importance of understanding how routines emerge and are shaped through the production and reproduction of patterns of activity, how actors are influenced by pre-existing social structures in their technology adoption, and how we need a holistic model to understand socio-technological networks in diffusion of health care innovations. In brief, it is seen that it is not enough to have a simplifying technology that is new and unique to potential customers. Instead, developers of health care innovations need to take into account routines, social structures and regulations in order to understand whether a novel idea has potential to become market practice. Also in public health care which is often organized as quasi-markets (Bartlett & Le Grand 1993), it should be noticed that the adoption of innovations requires acceptance from both by purchasers and producers of the services.

And last, taking the service ecosystems approach to innovations, we need to expand our view to cover the ecosystem or the value net that is involved in institutionalizing the innovation: the service providers and patients (consumer research) and wider social context (service research). We acknowledge that the view on consumer response needs to be widened to several actors in the market. These actors form the innovation networks, i.e. "the configurations of strategic entrepreneurial nets aimed at improving the effectiveness of innovation performance" (Corsaro, Ramos, Henneberg, & Naudé, 2012, p. 54). In this view, health care innovation is seen more holistically through multiple actors in the network.

2.3. Synthesis and the development of viability template

The study by Caldwell and Kleppe (2010) hints that consumer research sees institutionalization as an important step in the diffusion of health care innovations. However, this question as well as discussion on health care innovations in general has been missing in consumer research. However, dispersed studies in the field of TSR have guided us to focus on certain characteristics that may be used to assess the innovation potential ex ante. The innovation needs to be

- novel compared to substitutes
- fit with existing practices (legal and regulation)
- beneficial to users and cost-effective for providers
- beneficial to the value network

Christensen et al.'s (2009) framework synthesizes the views presented above. Their model consists of enabling elements of disruptive innovation: 1) Sophisticated technology that simplifies, 2) Low-cost, innovative business models, 3) Economically coherent value network and 4) Regulations and standards that facilitate change.

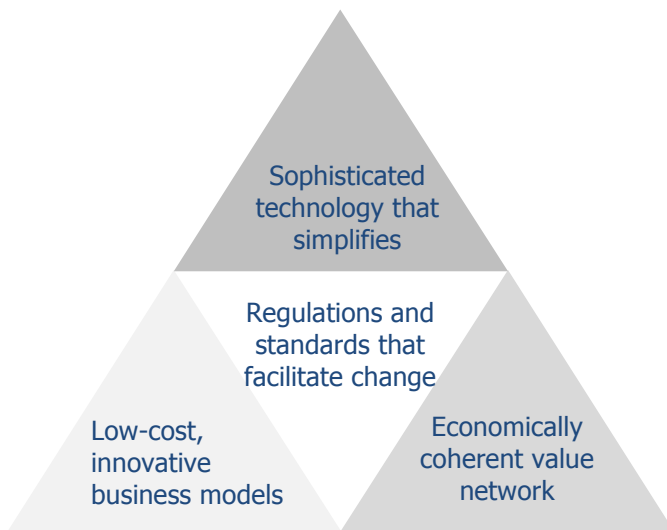


Figure 1 Elements of disruptive innovation by Christensen et al. (2009)

As the model above lacks operationalization, we synthesize the elements of disruptive innovation in the template that can be used in analyzing the viability of health care value propositions. As a practical tool, the viability template may be used to assess the innovation potential of transformative service ideas at least in two scenarios. First, it may be used for funding decisions to cherry-pick which projects have the most diffusion potential. Second, it may be used for business development by increasing understanding on the potential barriers for diffusion in the wider institutional setting.

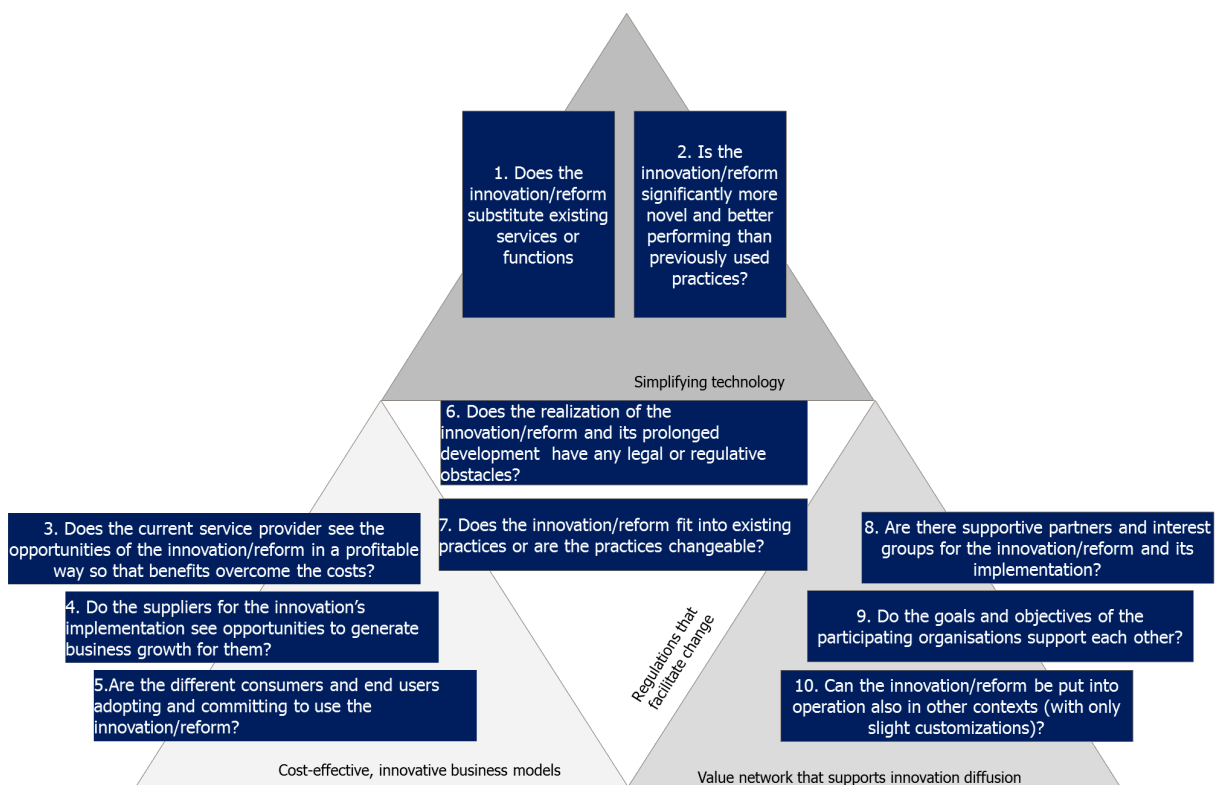


Figure 2 Viability template of transformative service innovations

Viability template is based on Christensen et al.'s (2009) elements of disruptive innovation. The uppermost triangle represents technological solutions, which enable some processes to be carried out in a simpler or more effective way. For its assessment following questions were derived that focus on value-in-use-in context (Vargo & Lusch, 2008):

- 1) Does the reform substitute existing services or functions?
- 2) Is the reform significantly more novel and better performing than previously used practices?

New technology enables value creation either by reaching a new performance level in some respect, or by simplifying previously used methods. When renewing health care services the substitution is very important feature. If the reform does not replace any older functions, its adoption would only increase the service system's size unless it enables very novel and radical value increase. Overlapping information systems and double bookkeeping of health information entries is a typical example of uncompleted substitution.

In the lower left corner, the service provider's need to have functional business models when using the reform so that consumers will value and use the provided service. We extend the business model view as to what are the incentives of different stakeholders to change their behavior in accordance with the reform. Thus, we extend the view to wider value co-creation opportunities.

- 3) Does the current service provider see the opportunities of the reform in a profitable way so that benefits overcome the costs?
- 4) Do the suppliers for the reform's implementation see opportunities to generate business growth for them?
- 5) Are the different consumers and end users adopting and committing to use the reform?

Willingness of these key stakeholders to adopt the use of reform is crucial for its viability. Decision-making becomes often monetized, requiring calculations and proof of concept that reform's adoption will lead into a positive surplus compared to existing situation. However, even if there are incentives to adopt the reform, two more elements affect its rate of success. Regulation and standards are located in the center and determine what kinds of changes are allowed and what not. Thus, the viability template takes into account not only various stakeholders but the influence of institutions enabling and constraining value co-creation and the diffusion of market practices (Akaka, Vargo, & Lusch, 2013).

- 6) Does the realization of the reform and its prolonged development have any legal or regulative obstacles?
- 7) Does the reform fit into existing practices or are the practices changeable?

Rules, standards and legislation are society's formal means to ensure fair, safe and ethical courses of action. And naturally they are drawn up only afterwards of any innovation emergencies. Informal routines and practices are rooted in organizations' culture, and changing of them requires recurrent communication and demonstrations.

Then the rightmost triangle describes the value network that affects the reform's diffusion. If the reform doesn't diffuse to other organizations, it easily can be seen only as an experiment and it will not reach its full coverage. Here, it is emphasized that support for the reform's diffusion can only be expected when multiple stakeholders experience mutually beneficial outcomes (Maglio & Spohrer, 2013)

- 8) Are there supportive partners and interest groups for the reform and its implementation?
- 9) Do the goals and objectives of the participating organisations support each other?
- 10) Can the reform be put into operation also in other contexts (with only slight customizations)?

Viable innovation requires that there are no major conflicts in interests of different stakeholders around the innovation. Mutual understanding of the goals and motives of each partner helps innovation adoption and diffusion considerably. Low need for modifications and customization implies for a greater simplicity of innovation and therefore greater chances for diffusion. The questions may be developed further but as such it synthesizes important themes raised in transformative service research, innovation literature, as well as institutional theories. In the following, we present three cases which are all assessed by using the viability template.

3. Research Design

The empirical study is built on the analysis of three pilot cases on transformative service innovations. These pilots were sponsored by a national innovation fund institute promoting projects aiming for sustainable well-being in Finland. One of its divisions aims to contribute to the development of user-friendly electronic services for health promotion and create conditions for Finland to become a pioneer in electronic welfare. The division has executed its mission by sponsoring research in the theme, influencing opinions and launching and funding experiment projects where new innovative ideas are put into practice and evaluated.

After running several pilot projects in health and wellbeing area, the institute commissioned the researchers to help analyzing the viability of their on-going and future pilots. The aim was to have a practical tool, a template that the funding institute can apply to estimate the potential viability of a reform (its strengths and weaknesses) and to focus their efforts in advancing its diffusion.

3.1. Cases

In our study in collaboration with the institute three pilot services were selected as interesting examples of potential transformative health care reforms: 1) electronic maternity card, 2) electronic tool for assessing the need for medical care for birth control, eating disorder and tooth crack and 3) electronic service to motivate senior citizens to do physical exercises. We do not claim that these transformative service ideas are necessarily truly transformative but they represent cases in which the service provider aimed at transformative service innovation.

An electronic maternity card currently piloted in one city region in Finland, involves replacing the traditional paper-based information storage procedures with an electronic health record service that allows expectant mothers to access all information relating to their pregnancy online. The objective of the electronic maternity card is to improve the exchange of information between maternity clinics, expectant mothers and hospitals, to reduce the likelihood of mistakes, to improve customer service, and to make monitoring

high-risk pregnancies more efficient. Besides self-monitoring their health expectant mothers can use the electronic service to share information from their pregnancy with their family and friends if so willing.

In the second service pilot concerning assessment of need for medical care the service provider management had a strong vision to speed up the triage determination process by replacing phone interview with an electronic form in selected patient groups. This freed nurse resources for other tasks and encouraged some customers to seek care which would not otherwise have done that. It was demonstrated that carefully planned electronic procedure can be created but traditional phone interview was still required in some situations.

The third pilot focusing on senior services showed that a tablet computer is a suitable and engaging platform also for elderly people to receive health related information and instructions if suitable contents are upheld. Technological execution was considered to be simple but the contents and user guidance are the areas which need most of the development efforts.

3.2. Data collection

Our assessment of the cases is based on 12 semi-structured interviews of the service providers, system providers and responsible project leaders at the funding institute. Each interview lasted from 1 hour to 2.5 hours. In addition, we collected secondary material from the funding institute (contracts, minutes of board meeting, and final reports when available) to justify our assessment.

Table 1 List of interviewees

CASE	STAKEHOLDER	INTERVIEWEES BY POSITION
Electronic maternity card	Service provider	Head Nurse, Maternity Clinic
		Executive Medical Director, Maternity Clinic
	System provider	Coordinator, IT Management of City T
		Chief Executive Officer, IT Company A
		Project Manager, IT Company A
Funding Insitute	Senior Lead	
Medical care need assessment	Service provider	Director of Development, Medical Care Organization
	System provider	Project Manager, IT Company B
	Funding Insitute	Senior Lead
Senior tablet computer service	Service provider	Director of Development, City J
	System provider	Project Manager, University
	System provider	Researcher, University
	Funding Insitute	Specialist, Systems

Our interview data is solely based on the viewpoints of service and system providers. However, to overcome the absence of end-customer view, we had access to consumer satisfaction survey results conducted in two of the cases, and tested all services by ourselves as well. As a result, the template may not cover all aspects in the assessment. Nevertheless, the data indicates the usability of the template.

4. Empirical findings

We applied the viability template presented in this article to assess the successfulness of the pilots. The results are presented in the Figure 3 using green, yellow and red colors to describe our interpretation of the status of the pilot regarding viability questions. Green means that the pilot is seen not to have problems regarding the specific item, whereas yellow points out some problems and red serious problems.

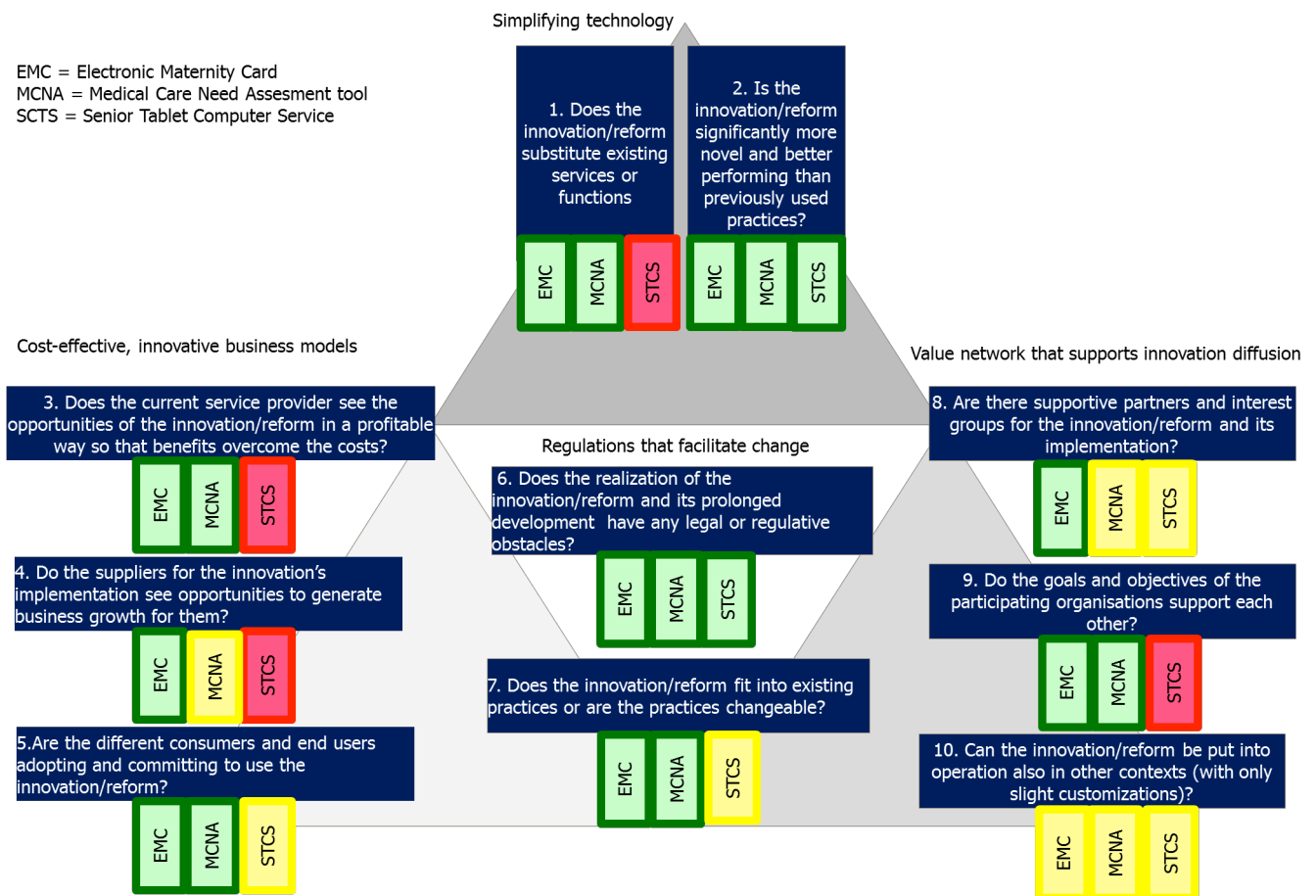


Figure 3 Three pilot cases assessed with the viability template

According to our analysis two of the pilots performed well in majority of viability issues. The first pilot (electronic maternity card, EMC) passed all questions with green colours, except for one yellow grading concerning adaptability of the reform in other context with differing information systems and interoperability requirements. The reform may require heavy investments in electronic patient records and can thus face challenges in wider diffusion at the time when public health care is looking for ways to cut spending instead of investing more.

Similarly, the expansion of the second reform (medical care need assessment, MCNA) to new contexts requires integration and tailoring. Furthermore, the system provider of case 2 needs to put more effort if it desires to expand the adoption of the reform. The new practice has been accepted within its current special clientele. However, more efforts are expected if the innovation is expected to have wider societal consequences.

The third pilot (senior tablet computer services, STCS) had many severe issues to tackle, predicting failure of the reform. Especially the business model of the reform was not successful and the parties did not see prospects for profitability or business growth. These challenges are crucial when the reform is not substituting existing services. The participating organizations are not committed to the wider diffusion of innovation, as they lack mutual goals. Also current funding system is not supporting the idea becoming a market practice as public and private partners are not interested in investing in preventive health care technology.

5. Discussion

This study mostly focuses on representing the practical tool for assessing potential transformative service innovations in the health care context. The assessment of the cases indicates how the viability template can be employed to understand the rich institutional context of new technology. The template combines together important issues that need to be considered in assessing the innovation's diffusion potential. The template is thus helpful in making funding decisions and in pivoting transformative service ideas.

The practical tool enabled us to focus on most crucial questions on the institutional setting surrounding the potential innovation. Thus, we were able to provide the funding institute important information that remains often overlooked in decision making and ex post analysis.

It should be emphasized that the red light indicating problems in the institutional setting does not simply translate as "no go". Instead, these lights indicate the action points that require further attention. In case, new simplifying technology does not benefit from wide support, it is possible to influence other stakeholders in various ways. For instance, a demonstration can be developed to showcase the benefits of new technology. Second, opinions of authorities and other key stakeholders can be changed with active lobbying. Third, stakeholders may become more committed to the innovation diffusion if they participate in the development process. Also cases implicated that in the regulated markets or quasi-markets of health care, procurement practices typically neglect to value propositions that promote diffusion or R&D of the service.

As a scientific contribution, we continue the discussion on assessing the role of institutional setting in the diffusion of innovations. Our study can be considered as an approach to operationalize "disruptive susceptibility" (Klenner et al., 2013), which focuses on the readiness of innovation networks to adopt new solutions. Similar to the study by Klenner et al. (2013), we extend the view from the service providers, customers and competitors to more general market characteristics. Readiness for change is important, as institutions strongly affect not only private market characteristics but public service innovations. For instance, non-profit organizations always engage in maintenance or transformation of dominant institutional logic depending on whether it fits the actor's aims

or not. In line with Coule and Patmore (2013) we conclude that in order to engage in deinstitutionalization or transformation of existing institutions, the service provider needs to have a value proposition that resonates with aims of potential network partners.

It is unquestionable that the practical development and scientific approval of the developed template require further evidence. There is a need for theoretically valid set of questions. The questions represented in this paper are selected intuitively by consulting the related literature. Before the viability template is adopted in wider use, there is a need to ensure that all important questions are asked. Despite these remaining shortcomings, we believe that our study advances the assessment of the institutional setting that is still often overlooked in the general innovation literature.

Particularly, our study takes a strong position in emphasizing the role of networks and institutions in health care context. The context is characterized by separation of buyers (or financers) and users of innovations. This is an important notice that should be taken into account in assessing the generalizability of the template in other contexts. Therefore, we invite other scholars to test the tool not only in the context of health care but in institutional settings that represent more traditional business markets. On the other hand, we also invite better understanding of the quasi-market context in health care.

6. Conclusions

In the institutionalization process of transformative service innovations we identify the importance of novel technology that outperforms existing solutions, value network that supports innovation diffusion, innovative business models that are cost-effective, and operative environment that supports renewal of the prevailing practices. We propose that in order to transcend from service ideas to transformative service innovations, all or most of these elements need to be aligned during the innovation process.

We contribute to the transformative service research by empirically explicating how to assess institutionalization potential in innovation process. In addition, we inform service innovation literature by conceptualizing service ecosystems approach to analyze the diffusion of innovative market practices. Particularly, we highlight the importance of environmental fit, or technology-market interplay, in the service innovation process. For practitioners (funding agencies and business developers), we provide a set of concrete questions that may be addressed in assessing and enhancing transformative service ideas. Last, we acknowledge that the development work of the practical template remains in its early stages. Therefore, we invite other scholars and practitioners to advance our understanding on how to assess the influence of institutional setting on the viability of transformative service innovations.

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