

Health, Cost, Prevention and Cure – Value and Value Co-Creation in Public Healthcare

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Abstract

Purpose – At regional, national and global levels, there is growing consensus that public healthcare is in crisis due to aging populations, rising costs and decreasing healthcare budgets, which highlight the increased importance of value co-creation within public healthcare systems. Despite such imperatives, limited attention has been paid to analyzing value co-creation in such contexts. The purpose of this paper is to examine how value is co-created, calculated and experienced by different micro, meso and macro level actors within public healthcare service systems in order to optimize value creation within the entire system.

Methodology/approach – This paper explores how value is calculated and experienced by different micro, meso and macro level actors within a public healthcare service system. Based on the conceptual discussion, we present and illustrate a value co-creation alignment framework of calculated and experienced value using the case of the implementation of Northern European swine flu vaccination programme in Finland.

Practical implications – Healthcare service providers need to consider the complementary and conflicting value determinations, tradeoffs and experiences at all levels of the service system in order to avoid cost overruns, variations in planned outcomes, value co-destruction and health-destroying behavior.

Originality/value – The paper contributes to the value discussion in S-D logic and service research by presenting a value co-creation alignment framework between different actors at the micro, meso and macro level in a service system, specifically public healthcare, which will inform service researchers and organizations interested in designing and facilitating value co-creation within service systems.

Key words – value, experience, co-creation, public healthcare

Paper type – Conceptual paper

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Introduction

At regional, national and global levels, there is growing consensus that public healthcare is in crisis due to aging populations, rising costs and decreasing healthcare budgets (Adshead and Thorpe 2006; WHO 2010). Despite these challenges, there is a paucity of studies in the service domain, which examine value co-creation in the context of healthcare, with some notable exceptions (Moliner 2008; Wu and Hsu 2008; Daryanto *et al.* 2010; Ferguson *et al.* 2010; Gruber and Frugone 2011; Elg *et al.* 2012; McColl-Kennedy *et al.* 2012), who argue that new types of interactions between professionals and patients are needed in order to better integrate the scarce healthcare resources and individual patients' resource integration and emergent value experiences.

In response to Berry and Bendapudi's (2007) exhortation to service researchers to study healthcare contexts, the chosen context for our article is public healthcare. To date, there has been a notable lack of consensus as to how value might be measured in public healthcare contexts (Jacobson and Neumann, 2009). This is somewhat surprising, as the average GDP share of healthcare in OECD countries was 9.7 per cent in 2009 (USA 17 %), and continues to increase (OECD Health Data 2011). The biggest sources of funding in healthcare in the OECD countries are public, 70 % of the total expenditure on an average (OECD Health data 2011).

In this paper, we draw on and amend Layton's (2007) definition of public healthcare service systems, namely "a network of individuals, groups and/or entities linked, directly or indirectly, through sequential or shared participation in economic exchange that creates, assembles, transforms and makes available assortments of products, both tangible and intangible, provided in response to customer demand" (p. 230). In line with the service-dominant (SD) logic's focus on value co-creation and resource integration, we define a public healthcare service system as a network of micro, meso and macro level actors, which are directly or indirectly linked through sequential or shared participation in value co-creation in order to create, assemble, transform and make resources within the service system (Layton 2007, p. 230 amended). Public healthcare service systems are extremely complex as different micro, meso and macro levels actors prioritize different types of decisions based on their own value determinations and measurements. From an overall system perspective, little is known about different actors' value determinations and tradeoffs at different levels within service systems. Despite such complexities, understanding the contested nature of different micro, meso and macro actors' value determinations is extremely useful for politicians, healthcare managers and employees, who need to manage ever increasing demands with limited funds.

In this paper, we specifically examine how value is co-created, calculated and experienced by different micro, meso and macro level actors within public healthcare service systems in order to optimize value creation within the entire system. We begin with a conceptual discussion of value co-creation and different macro, meso and micro level actors' value calculations and experiences in the context of public healthcare. Following this, we present and illustrate a value co-creation alignment framework using the case of the Finnish implementation of the Northern European swine flu vaccination programme, where the different micro and meso level actors' value calculations and experiences either supported or

hindered the attainment of the healthcare authorities' macro level value co-creation objectives. We conclude with a discussion of future research possibilities and challenges for researchers and practitioners.

This paper contributes to the value discussion in S-D logic and service research by presenting and illustrating a value co-creation alignment framework between different micro, meso and macro level actors in a public healthcare service system, which has gained limited attention to date. This can be used for research and managerial purposes when service researchers and organizations design and seek to facilitate value co-creation within such systems.

Calculated and Experienced Value in Public Healthcare Service Systems

Service research experienced a renewed and stimulating period of discussion and debate in relation to value and value co-creation over the last decade, with value co-creation being prioritized as central co-ordinating mechanism of dynamic service systems (Edvardsson *et al.* 2005; Ferguson *et al.* 2010). Lusch *et al.* (2010) emphasize the role of service systems to co-produce service offerings; exchange service offerings; and co-create value. Service systems are central to value co-creation as they highlight how actors at different levels within the system co-create value (Chandler and Vargo 2011).

While it is acknowledged that value emerges from interactions within such systems (Ferguson *et al.*, 2010), value co-creation is also “idiosyncratic, experiential, contextual, and meaning laden” (Vargo and Lusch, 2008a, p. 7). This means that different actors' value experiences are socially constructed in the context of the public healthcare service system in which the actors are embedded. While it is recognized that actors within service systems experience and co-create value, less attention has been given to the nature of different actors' value calculations and experiences at different levels within a service system, which is the focus of this paper. In order to explore different value calculations and experiences within public healthcare systems, it is first necessary to discuss the nature of different value determinations and value experiences in general, as these differences impact interactions when value is being measured or interpreted at different levels within a public healthcare system.

Calculated Value

To date, calculated perspectives of value characterize customer (perceived) value as a rather objective construct, within the marketing domain. Value perceptions have traditionally been considered to be the result of a cost-benefit trade-off (Zeithaml 1988), which is often operationalized as a ratio between price and quality (Monroe 1990; Varki and Colgate 2001). Perceived value relates to the difference between perceived benefits and perceived costs for example when a customer purchases a product. In service research, for example, such cost-benefit analysis has been used to understand value for service loyalty (e.g. Lee and Cunningham 2001). Established customer perceived value measures, such as the Customer-Perceived Value Measurement scale (PERVAL) (Sweeney and Soutar 2001) characterize customer (perceived) value and its associated measurement as a linear process involving preservice, inservice, and post service consumption phases (Sweeney and Soutar 2001), or merely as a value judgment based on in-use experience. To date, few marketing studies have sought to measure or assess value co-creation in healthcare contexts.

In contrast to these marketing conceptualizations, amongst public healthcare practitioners and academics, the most common value determinations utilize calculated economic evaluation

methods, such as cost effectiveness analysis (CEA), cost-benefit analysis (CBA), and cost-utility analysis (CUA). In CEA value calculations, the value of service (e.g. a specific technology, treatment, intervention or programme) is commonly determined by observing changes in specific clinical (and calculated) measurements, such as mortality or blood-sugar (HbA1c) levels. For instance, Berndt et al. (2007) have estimated cost and effectiveness for vaccines against neglected diseases (HIV/AIDS, malaria, tuberculosis) in low-income countries. To date, however, there have been limited uses of CEA in service operation management literature, for example evaluating the diagnostic decisions after mammography in order to maximize the total expected QoL life years of a patient (Ayvaci, Alagoz and Burnside 2012).

In contrast, public healthcare practitioners and researchers calculate CBA value in monetary or value in exchange terms. Cost refers to the incurred total costs of the implementation of the programme or service; and benefit refers to all positive impacts valued in money (Drummond et al. 2005). CBA is widely used in economic evaluations conducted in different sectors, such as in health economics. To date, some service research has incorporated such CBA analysis. For instance, Hammerschmidt, Falk and Staat (2012) who propose a benchmarking approach to calculate the potential value and cost-benefits of service production within health care networks.

Finally, CUA in public healthcare contexts is increasingly based on quality of life (QoL) measures and used as a decision criterion to allow market entry for pharmaceutical products (www.nice.org.uk/). Within such contexts, the generic measurement of QoL encompasses a methodology or instrument which includes one or more measurable dimensions (e.g. pain, sleep, mental wellbeing) affecting the well-being of an individual. In general, QoL calculations comprise an aggregated weighting of the relative values between each dimension, where the weighting is based on large population samples collected by interviews and questionnaires. Firstly, individuals are asked for their valuation in each of the dimensions, for example scores between 0 and 1. Secondly, a composite score value is calculated for each individual. This calculation may be repeated at several time points, e.g. before and after the given treatment or service.

In this paper, we define calculated value as value that is based on empirical measurements within the public healthcare system. Overall, calculated value and actors' decisions based upon it may depend on the chosen calculation methodology but usually the choice between preferred or the non-preferred alternative value calculations is judged by comparing the expected calculated value between (treatment or health program) alternatives. In general, the highest calculated value is the preferred choice in CBA, CEA and CUA.

Experienced Value

Within the service domain and the SD-logic discourse, the experiential perspective of value has been a central focus (Vargo and Lusch, 2008a). In their earlier articles, Vargo and Lusch have used value-in-use, but consider value-in-context to be the phenomenologically determined term related to value experiences. Vargo and Lusch (2008b) posit that experienced value is uniquely determined by the beneficiary not just while using the service, but in his or her wider phenomenological context that extends beyond a specific service and service network. The phenomenological approach to value can be recognized in Vargo (2008) and Vargo and Lusch (2008b), who suggest that the term value-in-context as opposed to value-in-exchange describes service and its associated experience the best. More recently, experienced value has been characterized as value in the experience, which is individually

intra-subjective as well as inter-subjective among individuals, and based on sensemaking in a social context (Helkkula, Kelleher and Pihlström 2012). Within this perspective, individual value determinations do not need to be based on financial calculations or factual events; it may even be based on imaginary events, such as being afraid before getting a diagnosis. In the context of a public healthcare service systems, an individual patient, for example, may experience being ill without a diagnosed sickness, or a patient may experience being healthy and well even with a diagnosed sickness. While the individually subjective concept of being healthy or ill may vary, internal sensemaking of value experiences is essential for healthcare. Furthermore, Elg et al. (2012) posit that patients are able to experience value in relation to their own care and treatment as value-in-context, which can be used as data when healthcare providers seek to facilitate value co-creation with patients in the context of their treatment.

In the context of this paper, we define preferred experienced value as value in the experience, which has positive connotations (Helkkula, Kelleher and Pihlström 2012) or preferred value in-use through service experiences (Sandström et al. 2008). In the context of public healthcare service systems, preferred experienced value is often connected to positive medical diagnoses. However, as experienced value is subjective, the same diagnosis may be preferred experienced value to one individual and non-preferred experience value to another. For example, an individual may interpret the diagnosis of being pregnant as preferred or non-preferred value. In this paper, we define non-preferred experienced value as value in the experience, which an individual considers to be unpleasant. In public healthcare service systems, non-preferred experienced value is often experienced when a patient is making sense of a sickness his doctor has diagnosed, or when a patient becomes disappointed with the progress of getting well.

Table 1 Calculated and experienced value

Value determinant	Cost	Value determinant	Literature
Calculated value			
Change in outcomes	Monetary	Change in outcomes	Berndt et al. (2007)
Monetary	Monetary	Monetary	Sweeney and Soutar (2001); Grönroos and Helle (2010); Hammerschmidt, Falk and Staat (2012)
In-use judgment	Monetary	In-use judgment	Ayvaci, Alagoz and Burnside (2012)
Quality of Life –score based on individual subjective assessments and aggregate measures.	Not addressed	Quality of Life –score based on individual subjective assessments and aggregate measures.	Berry and Bendapudi (2007); Ayvaci, Alagoz and Burnside (2012); McColl-Kennedy et al. (2012);
Experienced value			
Value in the experience. Based on subjective	Based on subjective sensemaking,	Value in the experience. Based on subjective	Helkkula, Kelleher and Pihlström (2012); Sandström et al.

sensemaking, experienced by different actors in a social context.	experienced by different actors in a social context.	sensemaking, experienced by different actors in a social context.	(2008).
Value in the experience, which has positive connotations or preferred in-use experiences	Based on subjective sensemaking of positive experiences of value co-creation.	Value in the experience, which has positive connotations or preferred in-use experiences	In service research value is often related to positive connotations (with some exceptions, see below).
Value in the experience, which an actor considers to be unpleasant	Based on subjective sensemaking of experiences of value co-destruction	Value in the experience, which an actor considers to be unpleasant	Cova and Dalli (2009); Cova et al. (2011) Echeverri and Skålen (2011)

In summary, different actors' contested value determinations and experience intersect and conjoin resulting in different value determinations within public healthcare systems. Having characterized calculated and experienced value within public healthcare service systems, we will now discuss how co-created value is calculated and experienced by different micro, meso and macro level actors within such systems and examine how different actors' value determinations impact each other. The different levels of macro, meso and micro are intertwined, as multiple actors including governmental, municipal and individual level actors co-create health and value within such systems.

Macro level

Value creation in public healthcare service systems is one of the main priorities of policy-level decision-making and incremental system design reforms worldwide (Feachem et al. 2002, Smith et al. 2010). Within public healthcare service systems, macro level actors include government/health ministry, health organizations and actor groups (e.g professional organisations), which are responsible for developing and implementing macro level health policies. The form and structure of public healthcare systems emerge from complex relationships rooted in economic, social and cultural contexts (Mittelstedt *et al.*, 2009). At the macro level, healthcare processes may become institutionalized, or various networks or specific type of actors may become legitimized as representatives of healthcare (DiMaggio and Powell, 1983; Chandler and Vargo 2011). Government decision-making in relation to public healthare is aided and sometimes based on the advice given by the national health authorities and other relevant agencies and other relevant agencies. In contrast, the legitimacy of doctors, nurses and other healthcare professionals is controlled by national or supranational health authorities in order to enable the use of competence and resources in an economic way that is measured for example with the ratio between evidence-based quality and effectiveness (Drummond et al. 2005). Aggregate decisions by government agencies and political parties at a societal level prioritize healthcare spending and investments based on the maximization of aggregate public health benefits and economic value.

Value co-creation objectives at the macro level include good health (sometimes more specifically, efficiency in the production of health and well-being) of the general population, responsiveness to the expectations of the population, and fair financial contribution to national healthcare systems (Kelley and Hurst 2006, WHO; Oliver and Mossialos 2005; Mossialos et al. 2010). Examples of macro level preferred value objectives include promoting national level health programmes, such as asthma care, obesity, smoking cessation and vaccination programs. Typically, however, policy making in relation to public healthcare service systems prioritizes calculated economic value, political and aggregate behavioral considerations, and does not consider sociological theories, such as practice theories and subjective experiences (Shove *et al.* 2012). Decision-making based on calculated economic value and outcome-based approaches is open to the potential criticism claiming that output or outcome measures may be inadequately defined. On the other hand, using different approaches to measurement is time consuming and requires substantial investment in evaluation (Jacobsson and Neumann, 2009).

Meso level

Meso level actors within a public healthcare service system prioritize aggregate demand, supply and costs in their value determinations. Meso level actors involved in the provision and co-creation of public health care include healthcare service providers, who are responsible for managing and implementing healthcare policies at the regional level, for example hospital districts, county councils, health maintenance organizations and hospital trusts. The meso level actors at the customer or patient side include third sector societies, such as diabetes or cancer associations, and consumer communities, which often are focused on a specific type of a sickness, target group or geographical area, such as groups or alliances to preserve obstetrics services in local hospitals. All meso level actors, however, are accountable for both macro level actors (health organizations and politicians), and micro level individuals (citizens and patients).

Value co-creation at the meso level includes regional implementation of national strategies. Providers of primary, secondary and tertiary public healthcare service co-create value with micro level actors within the guidelines and provisions of the supranational and national health programmes. Calculated value at the meso level is determined at the aggregate level within hospital (district) administration, Health Maintenance Organisations (HMO's, such as Kaiser Permanente in California), and elected municipal boards. To date, the most common value determinations at the meso level utilize calculated economic evaluation methods, such as cost effectiveness analysis (CEA), cost-benefit analysis (CBA), and cost-utility analysis (CUA). As previously outlined, in CEA calculations, the value of the service/technology/programme is grounded on effectiveness, which is commonly obtained by observing changes in specific clinical (and calculated) measurements, such as mortality or blood-sugar (HbA1c) levels.

While public healthcare managers recognize the need for a more holistic determination of value co-creation within public healthcare systems, until relatively recently, the evaluation of the meso level performance of such systems has been almost exclusively based on measuring costs, different types of service output and/or effectiveness measures originating from health services or medical or epidemiological research (Smith et al. 2009). Assessments based on purely subjective and experiential values have been largely lacking in healthcare. However, more recent developments and the adoption of quality of life (QoL) type measures (e.g. Sintonen 2001; McColl-Kennedy et al., 2012), have brought new promising methodologies to integrate both objective and subjective criteria to measure value determinations, specifically

individual (experienced) value and population based preference weightings (Sculpher et al. 2005; Guyatt 1993).

In the context of this paper however, it is important to note that value measurements based in QoL approaches are not equivalent to the concept of individual value or experience in services research, such as phenomenologically determined value (Vargo and Lusch 2008a; Helkkula et al. 2012). For instance, a typical QoL measurement instrument elicits value determinations by asking numerical judgments on various (experienced) health/well-being states or dimensions from the individual. These numerical values are used to calculate population level estimates for aggregate value of healthcare. Therefore, the application of aggregated QoL measures to individuals may differ from the individual value experience. For example, on the general level, the relative value of circumcision for young males is not significant in some populations, though it may be of significant value to an individual or smaller sub-population.

Micro level

Micro level actors in public healthcare service systems comprise individual citizens and their individual states of health and wellbeing. The actors at the micro level are at the service provider side are healthcare professionals, such as doctors, nurses, and other types of employees; and, on the customer or patient side, include patients and their family members. Increasingly, it has been recognized that promoting individuals' engagement in the co-production and co-creation of health (value) is crucial (Christensen et al. 2007; Reijonsaari 2013). For example, promotion of healthier lifestyles at a macro level may lead to increased wellbeing and life expectancy for micro level actors.

The value of the public healthcare system for the individual could be viewed from many standpoints. For an individual, health is a valuable resource in life. Poor health increases the risk of becoming ill or even dying which is one of the biggest changes in an individual's lifespan. Despite this reality; health care consumers have difficulties in making informed choices about their health. Consumers of public health services sometimes make subjective value determinations based on their or their social networks' previous value experiences as they have difficulty processing and understanding health information in general and are often not sufficiently literate to interpret the complex statistics and economic rationale underpinning macro healthcare decisions (Scammon et al., 2011). Experienced value may also depend on how the individual weighs up the expected benefits against the potential risks of a particular healthcare practice, which in turn may vary across different risk groups by an individuals' propensity and tolerance of risk (Helkkula, Kelleher and Pihlström 2013). Individual value experiences and determinations are also influenced by interactions with health employees.

Discussion: Value Co-Creation in Public Healthcare

The purpose of this paper is to examine how different actors calculate and experience value within public healthcare service systems. Based on the previous conceptual overview of value co-creation and discussion of how different micro, meso and macro level actors calculate and experience value within public healthcare service systems (see Table 1), we will now present an integrative value co-creation alignment framework (Figure 1), where we differentiate between calculated value, which is commonly obtained by observing changes in specific clinical measurements, and subjective value, which is based on individual sense-making in a social context. As outlined in Figure 1, we also distinguish between preferred and non-

preferred value and preferred and non-preferred value experiences. In our framework, objective preferred value is supported by clinical measurements, subjective preferred value by positive value experiences. Preferred calculated and experienced value refers to situations, where both calculated and experienced value have positive connotations, such as cataract surgery or hip replacements. Non-preferred calculated and experienced value refers to situations, where both types of value have negative connotations, for example medicines with low efficacy and strong adverse side effects. In public healthcare service systems in developed countries or with strong regulatory oversight, non-preferred treatments tend not to be provided through public healthcare systems.

In Figure 1, the quadrants NW and SE, where calculated and experienced values are not aligned, present possibilities for further research in value co-creation, and managerial possibilities to develop healthcare service. For example, the quadrant with preferred calculated, but non-preferred experienced value (NW) becomes important when the primary public healthcare objective aims to develop preventive healthcare. Typically healthy lifestyle, dieting or reoccurring preventive care, such as dental recalls, may be experientially non-preferred even if their calculated efficiency is high. On the other hand, the quadrant with non-preferred calculated and preferred experienced value (SE) represents public healthcare contexts which health authorities consider ineffective, even if people may be willing to support it. For example, medical rescue helicopters may well save an individual life and gain positive connotations, even if its calculated cost effectiveness is low.

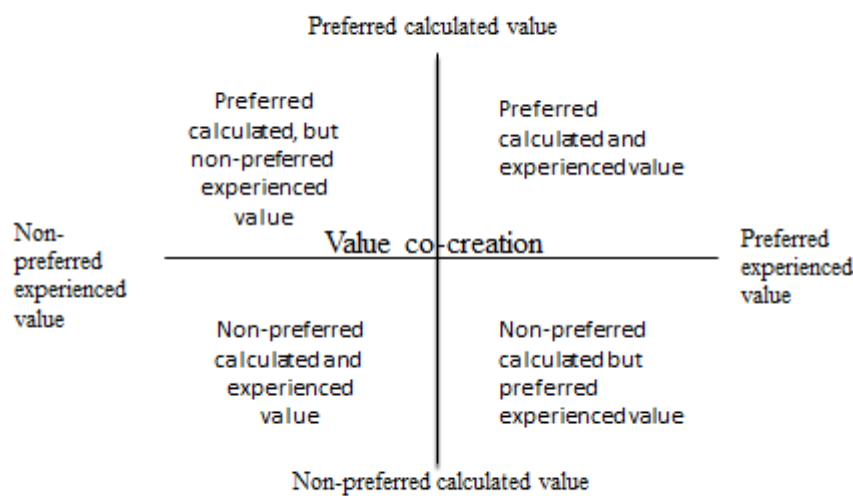


Figure 1 Value Co-creation Alignment Framework of calculated and subjective value

We will now illustrate the value co-creation alignment framework presented using the case of Northern European swine flu vaccination programme within the Finnish public healthcare system (see Figure 2). The illustration shows that that value in public healthcare systems is not determined by one actor or only at the macro, meso or micro-level, but in co-creation by different actors within the public healthcare system. The emergence of swine flu was seen as a potentially serious pandemic in 2009 as death and serious forms of disease caused by the AH1N1 infection were reported by the international health organizations. In the Finnish national health system, macro level authorities, meso level organizations and individuals

were soon all alert. The co-existence of different types of value calculations and experiences within the Finnish public healthcare practice is shown as a service of interacting value co-creation across macro, meso and micro levels with the systems and is illustrated using a system of arrows.

As previously outlined, macro level actors comprise health authorities and governmental or municipal political decision makers. In our illustrative case of the Finnish implementation of the Northern European swine flu vaccination programme, the governmental macro level actor was the Finnish National Institute for Welfare and Health and the political macro level actor was the Finnish Ministry of Welfare and Health. It was mainly macro level political decision-makers made their decision to purchase the swine flu vaccination and start a national governmental vaccination program in Finland as a potential threat of pandemic was discussed worldwide. The Finnish National Institute for Welfare and Health (THL) evaluated the value of the program/service using estimated and calculated facts (CEA + supplementary information). Government officials communicated these value estimations to authorities exerting political decision-making power (the Ministry of Welfare and Health), which balanced the recommendations based on CEA against public opinion (co-creation through elected representatives) in their final decision. It was decided that public healthcare would buy AS03-adjuvanted vaccine (Pandemrix) and provide it free of charge, prioritizing high-risk groups and small children. The swine flu vaccination program had to be implemented with exceptionally tight timetables and the usual complete testing of the vaccines was not conducted before taking them into the production. Both the National Institute for Welfare and Health (THL) and the political decision-makers were aware that the vaccination would cause some individuals (usually minor) adverse effects or symptoms.

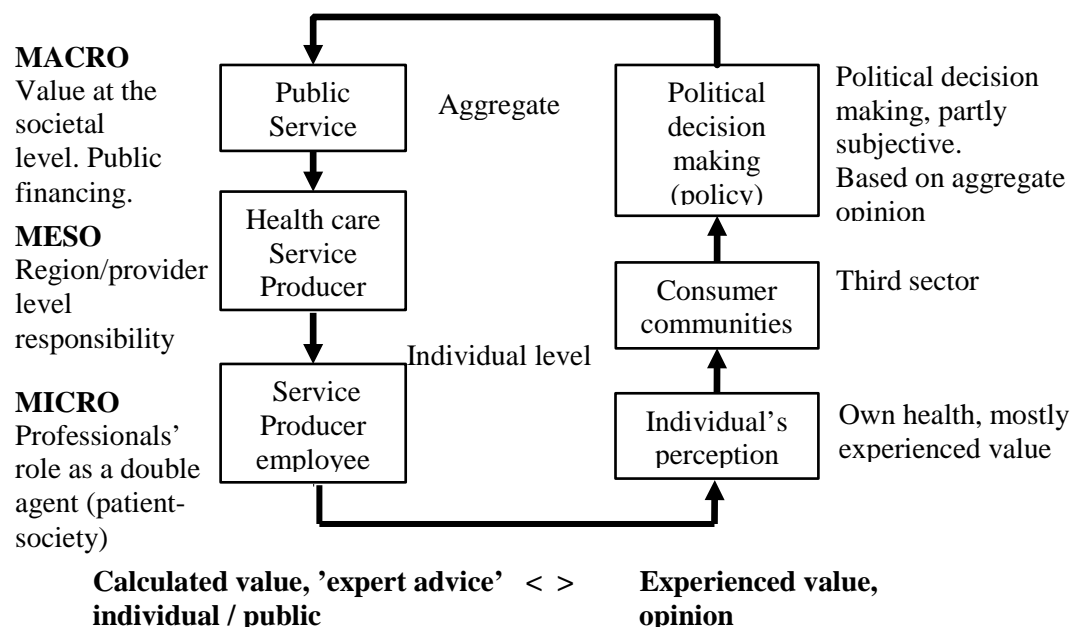


Figure 2 Different actors value calculations and experiences in relation to the implementation of the Northern European swine flu vaccination programme within the Finnish public healthcare system.

As previously outlined, meso level healthcare service providers present region level healthcare units, such as local municipal health centers or a hospital profit unit, focusing on

specific type of care throughout Finland. In our example, meso level is represented by various Finnish consumer communities and groups, which are also considered to be the third sector in healthcare, consisting of different types of focuses that has gathered consumers, patients or customers together. At this level, the need for co-operation in implementing the vaccination programme is critical. After the National Institute for Welfare and Health (THL) had informed the regional and local health service providers and producers with guidelines, such as risk populations to be prioritized, the local providers and producers implemented the vaccination program following broadly the national guidelines and each using their capacity to accomplish the program objectives. The willingness of the population to co-operate was crucial for the co-creation of value at individual and population level (e.g. via herd immunity). In the beginning the population was willing to take the vaccination and even in some areas gate-keeping was needed. Sometimes professionals made exceptions who was considered to be in a risk group.

Finally, in our illustration, the micro level includes individual patients (i.e. citizen consumers) and service employees, such as doctors, nurses or any other healthcare specialists. The health professionals offering the service (nurses/doctors) acted as double agents when they needed to simultaneously consider the official guidelines based on calculated facts and needs of the patient/customer. However, soon after the national rollout of the vaccination program, an increasing number of narcolepsy cases (a rare neurological condition) were reported among the young population (Partinen et al. 2012). Many parents became nervous about the unofficial information and rumors about the serious adverse effects associated with the vaccinations. Soon it became clear that there was an alarming increase in incident cases of narcolepsy amongst this population cohort. The anxious parents formed networks and demanded that the officials should start formal investigations, presenting heavy accusations on the national authorities.

At the same time as individual citizens and consumer communities were active in the Finnish media; political decision-makers became alarmed of the side effects of the swine flu vaccination. This caused the health authorities to reconsider the value of the vaccination programme. The authorities first responded by claiming that the calculated values are correct and that the vaccination program was generally a right decision (preferred, based on CEA). However, some experts did not agree and claimed that the whole vaccination program was an overreaction and its calculated value much less than anticipated. Further studies confirmed also that there were a markedly increased number of narcolepsy cases in the child population. Because of the time-related association with the vaccine, the Finnish health authorities decided to cease Pandemrix vaccinations in August 2010. The authorities were worried that this negative experience would affect the population's willingness to participate to future vaccination programs.

As summarized in Figure 3, the Pandemrix vaccination programme, which was initially intended as preferred value co-creation (1), caused non-preferred experienced value as some parents started to suspect causality between the Pandemrix vaccination and their child's narcolepsy (2). The vaccination programme therefore resulted in value co-destruction between healthcare providers, children and their families. The potential causality was discussed in Finnish and international media and empirical evidence was scientifically analyzed. As a result, the National Institute for Welfare and Health (THL) and health authorities realized the risk, and revised and updated their view on the benefit (calculated value) of the vaccination programme (3). Both ex-post objective measurements and

subjective value experiences were extremely negative in a specific sub-population and linked to the vaccination.

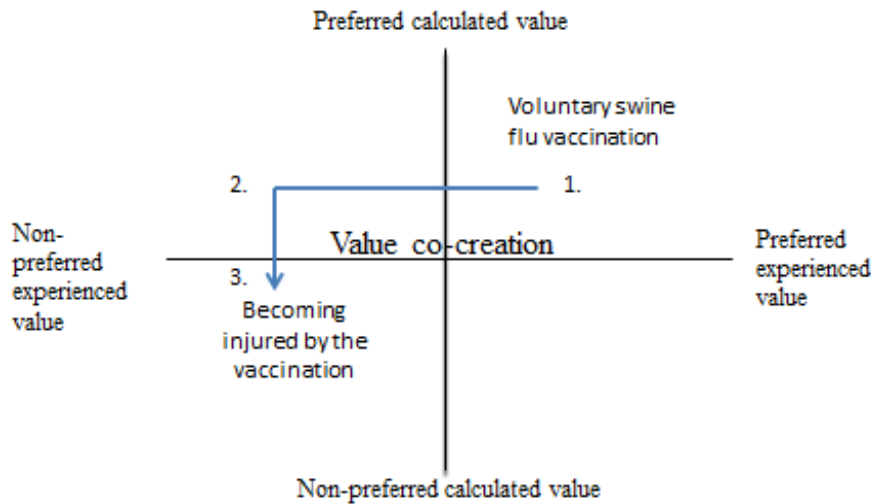


Figure 3 Value Co-creation Alignment Framework Presenting Value Destruction in calculated and subjective value

Implications for Future Research

Due to its share in the total service provision and the urgent need for transformative change of healthcare, public healthcare is an important context for service research and would welcome contributions from service researchers. Based on the conceptual discussion and illustration of the value alignment framework in the context of the Finnish implementation of the Northern European swine flu vaccination programme, we propose that researchers and managers analyze the contested value calculations and experiences of different micro, meso and macro level actors at different levels within public healthcare systems in order to better facilitate value co-creation purposes by acknowledging both individual experiential value and calculated value based on aggregate measures. The different and complex approaches to calculating and experiencing value and resulting decision-making at different levels within public healthcare systems, are critical in public healthcare contexts, where political decision makers decide on public funding. Political decisions are partly based on subjective, aggregate opinions, and partly on expertise advice. Political decision makers base their subjective decisions on aggregate opinions, which originate from individual citizens. Individuals do not necessarily understand the “context of context” of healthcare decision making; yet individuals are taxpayers financing such systems.

The challenge for service researchers, as well as actors within public healthcare service systems, is to be able to identify, measure and interpret the different types of calculated and experienced value within some complex and dynamic systems. This is important for future

research, as with rising healthcare costs, more active and participatory value co-creation comprising all micro, meso and macro level actors is needed to take care of the need of the burgeoning and aging global population. The implication for policy makers and other actors within public healthcare systems is that they should communicate their value determinations and experiences to actors at various levels within the systems in order to better facilitate value co-creation in the context of public healthcare for all citizens.

Table 2 Implications for future research

Aligning calculated and experienced value		Implications for future service research	
Possibilities	Challenges	Potential research questions for service research	Examples of specific research questions
Interpreting different types of value determinations within a service system will help to find mutual understanding in value co-creation.	Researchers and managers need to pay attention to different dynamic and context specific ways to determine value, which makes aligning value co-creation complex.	What are the different types of value determinations and interpretations in a specific service system? Which methods and techniques to use when analyzing different types of value determinations and interpretations?	Which kind of weight to give to actors at different levels when aligning value co-creation? For example, if and when public healthcare should finance cosmetic surgery.
Better understanding offers important data when actors at different levels are seeking to better co-create value in healthcare.	Scarcity in both operand (human) and operand (e.g. monetary) resources in service systems.	How is value co-created, calculated and experienced by different micro, meso and macro level actors within public healthcare service systems?	How to optimize value creation within the entire healthcare system in different customer segments? For example, when optimizing surgery costs, how much resources should be allocated to individual consulting before and after the surgery?
Innovating healthcare practices that aim to create preferred calculated and experienced value.	In designing public healthcare practices, should the perspectives of all actors should be taken into consideration, which may be time and resource consuming.	How to design and facilitate co-creation of public healthcare practices that integrate macro, meso and micro level value calculations and experiences?	Which types of public healthcare practices support or hinder preferred calculated and experienced value and for whom? For example, how much resources should be allocated to counselling pregnant women? Which type of counselling encourages women to co-create aimed health

			outcomes?
Practical implementation of public healthcare practices that create preferred calculated and experienced value.	Actors at different levels may not be aware of, competent or willing to support or implement such practices.	Case-specific research questions in empirical studies. For example, how to design preventive healthcare programmes, where individuals are active co-creators?	Case-specific managerial challenges. For example, what are the costs and benefits of a vaccination programme at different levels of the healthcare service system?
Evaluation of public healthcare practices, which takes into consideration value determinations and interpretations of actors at different levels.	As the different types of value determinations and interpretations do not use mutual measurement scales, it is challenging to compare the absolute value of any specific type of determination or interpretation.	How to compare subjective, experiential value interpretations with numerical, calculated value within a service system?	How to make strategic decisions based on different types of value determinations and interpretations?

Demonstrating tangible value from investments in public health will resonate with policy makers and the community and enhance the presentation of individual stories (Jacobsson and Neumann, 2009). It is therefore important for researchers and managers to be aware of these challenges and opportunities when they are seeking to co-create and align between different actors at the micro, meso and macro level in a service system. In Table 2 we summarize the challenges and opportunities for future research in value co-creation, when aligning calculated value and experienced value.

This paper, as all papers, has certain limitations. Firstly, in this paper, the context specific implications are targeted specifically to service research in public healthcare. However, the possibilities and challenges are valid in many different settings of value co-creation, where macro, meso and micro level actors are acting within the same service system. Examples of such service systems are for example service in retail business and public funded secondary and tertiary level education. Secondly, this is a conceptual paper presenting an illustration of a case in public healthcare. The authors encourage empirical research as well as conceptual research to contribute to the challenges in healthcare.

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