Niko Häkkinen

VALUE CO-CREATION IN DIGITAL SERVICES: CASE STUDY ON WEIGHT TRAINING AND COACHING WITHIN IT

TIIVISTELMÄ

Tämä maisterin tutkielma käsittelee arvon yhteisluomista digitaalipalvelukontekstissa, jonka kohdealueena on painoharjoittelu ja painoharjoitteluvalmennuspalvelut. Teoreettisena viitekehyksenä tutkimuksessa käytetään arvon yhteisluontiin kuluttajatietojärjestelmissä (CIS) keskittyvää mallia, jonka kautta pyritään tapaustutkimusmenetelmin ymmärtämään painoharjoitteluharrastajille ja -valmentajille (n=20) tärkeitä ominaisuuksia ja arvoja, joita kyseiset ominaisuudet erinäisten seurausten kautta palvelevat. Tutkimuksen tavoitteena on tunnistaa arvon yhteisluomisen eri osa-alueet edellä kuvatussa kontekstissa. Tutkimuksen tuloksista huomataan henkilökohtaisen kehityksen ja terveyden olevan keskeisiä arvoja yksilölle, joka hyödyntää digitaalisia palveluita painoharjoittelussaan. Lisäksi huomataan, että yleinen käytännöllisyys ja sosiaalisuus kyseisessä digitaalipalvelukontekstissa ovat käyttäjille tärkeitä arvoja. Huomataan, että tietyt ominaisuudet palvelevat enemmän utilitaristisia arvoja kuten yleinen käytännöllisyys, kun taas toiset ominaisuudet palvelevat enemmän hedonisia arvoja kuten hauskuus.

Asiasanat: arvon yhteisluonti, palvelulogiikka, kuluttajatietojärjestelmät, painoharjoittelu, tapaustutkimus

ABSTRACT

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This master´s thesis focuses on value co-creation in digital service context, where the target area is weight training and coaching related to weight training. The consumer information systems framework for value co-creation is used as the theoretical framework, through which the intention, with the tools provided by case study methods, is to understand features, their consequences and values that are perceived by people practicing weight training and people offering coaching services for weight training (n=20). The goal of the study is to recognize the different components of value co-creation in the aforementioned context. It is noted from the results of the study that personal progress and health are central values for a person who makes use of digital services in their weight training. It is also noted that the general convenience and sociability are perceived as an important values in the mentioned digital service context. It is noted that certain features serve more utilitarian values such as general convenience, whereas other features serve more hedonic values such as fun.

Keywords: value co-creation, service logic, consumer information systems, weight training, case study

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1 INTRODUCTION

1.1 Background

1.1.1 Describing the field of the present study

Marketing has switched from good-centric approach to service-centric approach during the last decades. The traditional view of value relies on taking advantage of tangible resources, embedded value and transactions. However the focus has switched to interaction-centered view of marketing where intangible resources such as competences and skills, co-creation of value and relationships form the basis for modern service logic view of marketing.

1.1.2 Central concepts

- Value-in-use and value-in-exchange: Modern versus traditional perception of value
- Service Logic: A modern marketing logic
- Value co-creation: interaction-centric modern form of creating value in services
- Digital services: Services provided through information network
- Weight training: Type of physical training that makes use of added weights, be it barbells or dumbbells for example. Sports that involve weightlifting to mention a few are strength training, body building and strongman. Also other sports such as ice hockey and javelin throw make use of strength training. It is also a hobby in itself for non-professional individuals that don´t necessarily use weight training to support a particular sport, but do weight training to maintain or improve their physique.
- GetTrained: A digital service concept for weight training with a goal to unite the people weight training and the people offering coaching services for weight training.

- Laddering interviews: The method used in the empirical part of this thesis

1.1.3 Motivation

With the emergence of different services and application related to training, nutrition and wellbeing in the first place it is important to fathom how value is co-created among people weight training and the people offering coaching services for it in digital service use contexts. To achieve this we need to understand the original values of training and offering coaching services and the reasons for using digital services that can support these different values.

1.1.4 Former research

The foundation of service dominant has been created little by little while the economy has switched from goods-centric view to value-centric. However the research made by Vargo and Lusch (2004) has been viewed as the basis for a modern view of service dominant logic.

Since the release of Vargo's and Lusch's (2004) study, service-dominant logic has been discussed a lot. Through the critique and theoretical restructuring of Grönroos (2011) a Nordic school of thought of "Service Logic" has been formed.

The laddering technique has its foundation in personal construct theory (Kelly, 1955), critical success chains (Peffers et al., 2003) and critical success factors (Rockart, 1982; Premkumar & King 1994).

Tuunanen et al. (2010) have created their own framework of value co-creation in a consumer information system context. This framework has a basis in other scientific disciplines such as the aforementioned laddering interviews, Social Actor Theory (Lamb, 2005; Lamb, 2006; Lamb and Kling, 2003) and Political Ecology of Requirements (Bergman et al., 2002). The framework consists of 6 main elements which are "Construction of Identities", "Social Nature of Use", "Context of Use", "Participation in Service Production", "Service Process Experience" and "Goals and Outcomes". The first three elements are system value propositions and the last three are customer value drivers (Tuunanen et al., 2010). The empirical work of Tuure Tuunanen has been strongly based on the laddering interviews and thus it is logical to continue with this method having mr. Tuunanen as a supervisor in this process.

1.2 Goals and methods

1.2.1 Scope of the present thesis

This thesis will handle value co-creation between people doing weight training and the people offering coaching services for weight training using digital services.

1.2.2 Research questions

The main research question is: What are the value propositions and the value drivers in consumer information systems that support weight training and coaching in weight training? The background question for the literature review is: What is value co-creation and how does it manifest itself in the use of consumer information systems supporting weight training and coaching related to weight training?

1.2.3 Methods

The methods used are literature review and qualitative field study conducted using laddering interviews.

1.2.4 Data collection methods

Methods for gathering information for the literature review are materials of former courses organized in the University of Jyväskylä, principally Tuure Tuunanen's course on Digital Service Innovation and Design, and keyword search conducted in Google Scholar. Also a backward search of studying articles referenced in articles is used.

The method for the qualitative field study is a laddering interview which will be done with 20-30 people who do weight training and/or offer coaching services for weight training. Before that around 10 people will be contacted to both get them to do the interview and to form the stimuli list for this study.

1.2.5 Expected results and their significance

Results are expected to be the following: The people who do weight training use digital services that support the coaching relationship to reach their personal training goals and to socialize with their peers. The coaches use the service to sell their know-how and their products, also acting in social contexts.

1.2.6 Possibilities of making use of the results of the present thesis

The results of the present thesis can benefit the concrete development of a digital platform such as GetTrained. The results may also benefit coaches in order to get a different point of view on what the people buying coaching services are looking.

2 Service-dominant logic view on value co-creation

In this chapter service-dominant logic (S-D logic) is introduced. S-D logic is a foundational mindset for understanding value co-creation. S-D logic view covers value co-creation which is seen through value-in-use. First the concept of value introduced. Then S-D logic is introduced. All in all this chapter is meant to provide background for the consumer information system framework of value co-creation, which will be introduced in the third chapter.

2.1 Concept of value

To understand how value is co-created, it is necessary to introduce the concept of value and different categories of value. Value is an elusive concept due to its use in many different contexts. Value-in-exchange and value-in-use are the two general meanings of value that are widely used in the service-dominant logic and goods-dominant logic literature (Vargo & Lusch, 2004). According to Vargo, Maglio and Akaka (2008) it was Aristotle who first made the distinction between the meanings "use-value" and "exchange value". These two meanings of value reflect different ways of thinking about value and its creation. Therefore it's important to define them before discussing them further in service context.

2.1.1 Value-in-exchange

Value-in-exchange represents the traditional view of value. The focus is on company's output, price and monetary gains created by business partners. (Vargo & Lusch, 2004; Vargo, Maglio & Akaka, 2008; Grönroos & Helle, 2010.) In the traditional literature value has been viewed as an embedded property of a product that is exchanged. Exchange has been viewed as the central concept in marketing. Therefore the value for the customer is embedded to the product itself, rather than the value perceived by the customer. (Grönroos, 2006.) Another way of approaching value-in-exchange is considering the ratio between

service quality and cost (Sandström, Edvardsson, Kristensson & Magnusson, 2008).

2.1.2 Value-in-use

In the S-D logic perspective value is realized through the use of service (Vargo & Lusch, 2004; Sandström et al., 2008; Michel, Brown & Gallan, 2008*)*. Value-in-use focuses on the value perceived by the customer (Vargo, Maglio & Akaka, 2008). Grönroos (2011) proposes that value concepts imply assessing the benefits against sacrifices, hedonic appreciation and the means-ends models of the object consumed. After using and experiencing the service, the customer evaluates what the value is in the use of the service (Sandström et al., 2008). Value-in-use is also individual to every customer (Vargo & Lusch, 2004). Value-in-use as a service concept (Vargo & Lusch, 2004) and "perceived value" (Sweeney & Soutar, 2001) as a concept of consumer culture studies suggest the same kind of phenomenologically determined view of value.

 Holbrook (1996) defines customer value as an interactive relativistic preference experience. By interactive Holbrook (1996) means the used good or service alone doesn't render value, but an actor who is able to appreciate it is required. Relativistic means that customer value is comparative, personal and situational. Therefore I can claim I prefer weight training over body building but I can't claim that I like weight training more than you do. Preference in Holbrook's (1996) customer value definition refers to the value as evaluation, not to plural form values. Value in singular refers to the immediate perception, whereas values in plural refer to the overall criteria in the back of one's mind that guide the decision making. The typology of customer value by Holbrook (1996) is presented in the table below (table 1).

TABLE 1 A Typology of Customer Value (Holbrook 1996)

		Extrinsic	**Intrinsic**
Self-oriented	Active	EFFCIENCY (Convenience)	PLAY (Fun)
	Reactive	EXCELLENCE (Quality)	AESTHETICS (Beauty)
Other-oriented	Active	STATUS (Success, Impression Management)	ETHICS (Justice, Virtue, Morality)
	Reactive	ESTEEM (Reputation, Materialism, Possessions)	SPIRITUALITY (Faith, Ecstasy, Sacredness)

The key dimensions of Holbrook's (1996) classification of customer value are Extrinsic/Intrinsic, Self-oriented/Other-oriented and Active/Reactive value. Extrinsic value describes the relationship between goals and outcomes. It refers to the utilitarian goals of getting something accomplished. Intrinsic value refers to valuing the experience as goal in itself. Self-oriented value is value that's experienced for one's own sake discreetly. Other-oriented value is the empathic value meaning something is valued for others' sake. Active value is value generated by an individual when they act upon a tangible or intangible object. Conversely reactive value means responding to an object that is acting upon an individual. (Holbrook 1996.)

2.1.3 Summarizing value

Value-in-use may be best described through examples. To paraphrase the car example by Vargo, Maglio and Akaka (2008) in weight training context, if an individual had no skills whatsoever on olympic squatting, they owned an expensive olympic squat bar with barbells and they functioned in social networks in which the olympic weightlifting had particular meanings, the very bar and barbells this individual owns would have no value.

In the present thesis value is approached mainly through how it is perceived by the customer (Vargo & Lusch, 2004). This value-in-use notion is reflected with the arguably outdated view of value-in-exchange (Vargo & Lusch, 2004). Value and its creation processes are moving from a product-centric and company-centric view to an experience-centric view where personal and experiential perception plays major role (Prahalad & Ramaswamy, 2004).

Grönroos (2011) points out that if the customers cannot generate the desired value out of a good or a service activity, they don't want to pay the de-

manded price of it, but will stop buying or try to negotiate the price. Therefore value-in-exchange is a function of value-in-use. (Grönroos, 2011.)

2.2   Defining service

Throughout the history service has been defined from many different perspectives. Narrow, wide, simplified and complex definitions have been provided. Vargo and Lusch (2004) define service as the application of specialized competences, namely knowledge and skills, for the benefit of others or the entity itself. Services are provided through deeds, processes and performances. In comparison to the more traditional and simplified definitions of services, this wider view is more inclusive and applicable to all market offerings, including the ones that include goods. (Vargo & Lusch, 2004.)

According to the Nordic School view (Grönroos, 2006) services are defined as processes consisting of a set of activities. These activities take place in interaction between a customer and people, goods and other physical resources, systems and infrastructures that represent the service provider and possibly the involving other customers, who aim at solving customers' problems. Service marketing is inviting the customers to use the service processes by making promises about the value the customer is expected to perceive (Grönroos, 2006). Edvadsson, Gustafsson and Roos (2005) propose that service is a *perspective on value creation* rather than a category of market offerings. They also suggest that 1) the focus of service is on value perceived by the customer, 2) the co-creation of value with customers is key 3) and the interactive, processual, experiential and relational nature form the basis for characterizing service (Edvadsson, Gustafsson & Roos, 2005). Therefore it can be argued that the definition of service should be approached considering what a service should do for the customer, namely service as a marketing logic. The company should support the customers in a value creating way, meaning that the customers should feel they are better off than they were before the support provided by the company or the support provided by an alternative company. (Grönroos, 2006.)

Grönroos (2008) divides the concept of service to three different aspects that are service as an activity, service as a perspective on the customer's value creation and service as a perspective on the provider's activities. In the traditional literature service is often viewed as an activity which is a process where someone does something to assist somebody else. These assisting practices imply that a service activity ought to support some activities or processes of a customer, despite whether or not this client is a firm, household or an individual. Service as a perspective on the customer's value creation and service as a perspective on the provider's activities are not related to the service activity, but they are rather point of views that can be applied to customers' and organizations' processes. (Grönroos, 2008.) Grönroos (2008) describes these perspectives as customer service logic and provider service logic.

According to Spohrer and Maglio (2008) *pay for performance* is a sensible definition on service since it encapsulates the main idea of the provider doing something for the client. This is essential as compared to the exchange of a good (Spohrer & Maglio, 2008).

To summarize, in the present thesis service is viewed as the beneficial application of competences (Vargo & Lusch, 2004), which takes place in an interaction between the provider and the customer (Grönroos, 2008), where the customer pays for performance (Spohrer & Maglio, 2008). In the value co-creation scope of this thesis, it is also important to understand that service process often includes the provider and the customer perspectives. The provider perspective is about the marketing processes whereas the customer perspective is about the processes of the customer's value creation (Vargo & Lusch, 2004; Grönroos 2008).

2.3 Digital services

The business climate has changed drastically due to information technology. As opposed to adopting a traditional information system and product view it has become common to approach information technology (IT) from a service perspective (Mathiassen, & Sørensen, 2008; Williams, Chatterjee & Rossi, 2008). Williams et al. (2008) define a digital service as a solution to a real-world problem, that may also be driven by business motivation, meaning there is profit to be made in offering the service. In the present thesis the terms information services and digital services share the same meaning. The main idea the theory by Mathiassen and Sorensen (2008) is the following:

> The theory suggests that information services are configurations of heterogeneous information processing capabilities; these services are evoked by organizational actors to help execute tasks, and evoking different configurations may lead to equally satisfactory outcomes.

Four different types of services are categorized in Mathianssen's and Sørensen's (2008) theory. This diversity of organizational information services is presented in the table below (table 2).

TABLE 2 The diversity of organizational information services (Mathianssen, Sorensen & 2008)

<div align="center">Uncertainty</div>

		Low	High
Equivocality	High	<u>Adaptive service</u> **Use** of information **Relationship** service	<u>Collaborative service</u> **Production** of information **Relationship** service
	Low	Computational service **Use** of information **Encounter** service	Networking service **Production** of information **Encounter** service

The types of information systems are computational, adaptive, networking and collaborative services. In the organizational processes the four types of information services relate to different task contexts that are charactereized by their level of equivocality and uncertainty (Mathiassen, & Sørensen, 2008).

Williams, Chatterjee and Rossi (2008) present their own digital service design taxonomy. The taxonomy is based on two main dimensions which are design objectives and service provider objectives. Interactions should be taken into account as design objects since the end user is the one who is going to consume the digital service. Often there is a dilemma between making the services simple to use versus making the services too complex. (Williams et al., 2008.) The diagram below (figure 1) illustrates the digital service design taxonomy by Williams et al. (2008).

Objectives →

Design Dimensions →		Business	Interaction	Technology
	Service delivery	Reducing costs	Mobility Scalability	Efficiency Bandwidth
	Malleability	Adaptability Opening new markets	Customization	Evolution
	Pricing / Funds	Value-added services	Optimizing revenue	Commoditization
	Service Maturity	Adoption & Scale	HCI standards	Towards full automation

FIGURE 1 Digital service design taxonomy (Williams, Chatterjee & Rossi, 2008)

The four design dimensions delivery, malleability, pricing and service maturity guide the improvement of the service. The design objectives have dependencies with the three design objectives. These objectives are business, interaction and technology. For example the service malleability is enabled by interaction after developing tools for customization. (Williams et al., 2008.)

2.4 Goods-dominant logic

In the traditional marketing purpose of economic exchange is to make and distribute products that are sold (Vargo, Maglio & Akaka, 2008). This marketing logic is called goods-dominant logic (G-D logic). G-D logic has its roots in the industrial revolution and it focuses on embedded value, tangible resources and transactions. (Vargo & Lusch, 2004.)

Embedded value means the value that is embedded to the physical products during the manufacturing process. The tangible resources can also be categorized as operand resources which means the resources are acted upon. (Vargo & Lusch, 2004.) Facilitating exchange has been viewed as the main object of marketing and thus facilitating and creating transactions has become a central part marketing models (Grönroos, 2006).

In the ideal goods-dominant setting the product is created in isolation from the customer and the output is a standardized good which results in max-

imum efficiency in production and maximum profit (Vargo & Lusch, 2008b; Vargo, Maglio & Akaka, 2008). The company provides goods as resources for the customer who can make use of them (Grönroos, 2006).

Smith (1776) defined value-in-exchange based labor as productive labor, even though he was aware of the value-in-use based labor that wasn't connected to the production of goods, such as doctors practicing their profession. This competence-driven work he defined as unproductive, however acknowledging it also has value (Smith, 1776). Kotler (1984) described marketing as a decision-making process directed at the targeted customers to make profit. Thus it can be argued that in G-D logic the ultimate goal of marketing is profit at the cost of customer satisfaction.

Along with manufacturing goods with embedded properties, G-D logic fit well with the scientific climate of striving to turn economics into measurable and deterministic science like Newtonian mechanics. G-D logic has reached a status as an economic paradigm. (Vargo & Lusch, 2004.) However there is a need for a complementary logic that takes into account the service-side of things.

2.5 Motivating the shift from goods-dominant to service dominant logic

A central way to fuel economic growth and to raise quality and productivity of services in the present climate is to develop service innovations. Services play a central role particularly in the global knowledge-intensive business sector. Innovation results in higher productivity, meaning that the same work is done with less effort. (Spohrer & Maglio, 2008.) According to Day and Montgomery (1999) 4P marketing lacks the recognition of marketing as an innovative process and therefore Four P's should be viewed as a handy framework.

Lack of interaction is another shortcoming of G-D logic. The traditional goods-based marketing models do not provide the marketer with any means of taking part to the consumption process interactively. The good is the only thing the customer is experiencing. Even if the customer were supported with some information regarding the goods, the goods themselves are not interactive. The providing company gets no information about what the customer is doing with the goods. This phenomenon of consumption is referred to as the *black box* for the marketer. (Grönroos, 2006.)

Interaction is inseparably connected to the processual nature of service. Therefore consumption and production of services are at least partly simultaneous processes. This means that the provider of service also partly enters the consumption sphere. This is the basis of co-creation of value. (Grönroos, 2006.) Therefore it's the stepping out of this "black box" of interaction that has made the change in marketing. As the production of service is an "open system" for the customer, so should the consumption be for the provider. Even goods-

dominant industries are becoming more service-like. The goods are more and more produced in ways which allow customer to participate in production. (Grönroos, 2006.)

Resources are perceived in a reasonably narrow way in G-D logic. The competences are not taken into account as resources and resourcing is mainly seen through the use of tangible resources that are acted upon. Resources that are acted upon are called operand resources. In G-D logic view consumers are often viewed as operand resources that is, resources are acted upon, just like goods are. (Vargo & Lusch, 2004.)

G-D logic also has ethical baggage. Vargo and Lusch (2004) argue that a lot of today's societal and ethical issues are grounded in G-D logic and that G-D logic might even be the source of some of the underlying concerns. The purpose of commerce according to G-D logic is not to serve but to make and sell more units of output. This informs social and ethical issues as compared to a logic according to which the purpose of exchange is to mutually serve (Vargo & Lusch, 2004). Vargo and Lusch (2008a) argue that the concepts of service-dominant logic are inherently ethical. This is due to the integrative nature of the principles of service-dominant logic (Vargo & Lusch, 2008a).

Since G-D logic is not accommodating to goodness nor the marketing of intangibles such as competences, it is not accommodating to value-in-use either. Value in G-D logic is deeply grounded to value-in-exchange (Vargo & Lusch, 2008a).

To summarize the shift from goods-dominant to service-dominant logic, during the last decades both business scholars and leading industry companies have expressed the need for transforming significant part of company activity or even the entire company orientation from goods-centered output production to a concern of service (Vargo & Lusch, 2008b).

2.6   Service-dominant Logic

Here the service-dominant logic and its central facets are presented.

2.6.1 General definition of S-D logic and the foundational premises

As it was noted before, service in the present thesis is seen through value-in-use, which is tied to value creation. Both of these concepts are part of service-dominant logic, which is a mindset of marketing. The content of this chapter is mainly based on the work of Vargo and Lusch (2004) who however pinpoint that S-D logic is not owned by anyone and it is rather a interdisciplinary way of approaching services.

The alternative view to G-D logic, S-D logic is tied to value-in-use view of value instead of value-in-exchange (Vargo & Lusch, 2008a). Instead of focusing to tangible resources, the focus is shifting to intangible resources like skills,

knowledge, interaction and relationships. The orientation has shifted to the consumer as opposed to the producer. The central unit of exchange is not the tangible good but service itself. (Vargo & Lusch, 2004.)

Vargo and Lusch (2004) have presented foundational premises to summarize all the important aspects of S-D logic. These premises have been revised through the discussion between scholars and companies. The foundational premises of S-D logic (Vargo & Lusch, 2008) and its formulations made by Grönroos (2011) are presented in the table below (table 3).

TABLE 3 Foundational premises of S-D logic (Vargo & Lusch, 2008a) reflected with the reformulations made by Grönroos (2011)

Premise number	Foundational premise	Reformulated premise
FP1	Service is the fundamental basis of exchange.	Reciprocal value creation is the fundamental basis of business, with service as a mediating factor.
FP2	Indirect exchange masks the fundamental basis of exchange.	
FP3	Goods are a distribution mechanism for service provision.	All resources and processes are distribution mechanisms for service provision, however without including value in themselves.
FP4	Operant resources are the fundamental source of competitive advantage.	
FP5	All economies are service economies.	
FP6	The customer is always a co-creator of value.	Fundamentally, the customer is always a value creator.
FP7	The enterprise cannot deliver value, but only offer value propositions.	1) Fundamentally, the firm is a facilitator of value for the customer, but 2) Provided that the firm can engage with its customers' value-creating processes during direct interactions, it has opportunities to co-create value jointly with them as well.
FP8	A service-centered view is inherently customer oriented and relational.	
FP9	All social and economic actors are resource integrators.	All social and economic actors are resource integrators: When resource integration takes place in direct interactions with the service provider, the company can move from value facilitation to value co-creation
FP10	Value is always uniquely and phenomenologically determined by the beneficiary.	1) Value is accumulating throughout the customer's value-creating process, and 2) Value is always uniquely and both experientially and contextually perceived and determined by the customer.

The FP1 suggests that service is the foundational concept of exchange and marketing. It implies a very different kind of process for marketing activity and for the firm as a whole, that is to provide service to all stakeholders, including customers, stockholders and employees. This should result directly in investing in people as operant resources, relationships, quality service flows. Less directly it

should result in transparency, sustainability and ethical ways to exchange. (Lusch & Vargo, 2006.)

In FP2 exchange has been divided to indirect and direct exchange. Direct exchange refers to the immediate monetary exchange whereas indirect refers to the exchange of skills and competences (Vargo & Lusch, 2008a). According to Grönroos (2008) concentrating marketing as exchange draws the marketers' attention to short-term value-in-exchange and away from creating value. Grönroos (2008) also argues that the distinction between direct and indirect exchange doesn't really resolve these issues in any fundamental way, and using the term exchange might even weaken the concept of exchange as seen through economic theory. Therefore it can be argued that FP2 easily becomes an elusive premise that is hard to apply to practice when planning and analyzing marketing activities (Grönroos, 2008). This premise is strongly linked to the first premise, and Grönroos (2008) suggests that it is interaction rather than exchange that is the fundamental construct in marketing.

In S-D logic goods are seen as service-delivery vehicles, as FP3 suggests (Vargo, Maglio & Akaka, 2008). However Grönroos who represents the Nordic School view of service logic (2006) criticizes this view arguing that goods are rather resources among other resources to enable service process and service consumption through value-in-use. Without the consumer-provider interaction the goods are just goods and they don't transmit service (Grönroos, 2006). Vargo and Lusch (2008b) state that goods are not always involved in service process, and when they are, they are the conveyors of competences, which eventually represent the essential source of value creation.

In FP4 it is stated that operant resources are the fundamental source of competitive advantage. This means that through knowledge, skills and competences the comparative ability to cause desired change drives competition (Vargo & Lusch, 2008a).

FP5 refers to services being exchanged for services that was argued by Bastiat in the 1900th century (Vargo & Lusch, 2008a). This was 100 years before the term "service economy" was coined.

FP6 is about value co-creation. Vargo and Lusch (2004) state that customer is always the co-creator of value. However this subject will be addressed in its own chapter later on.

In FP7 it is stated that the companies can only offer value propositions (Vargo & Lusch, 2008a). This is part of the dualistic provider - value co-creator setting and will be addressed together with value co-creation.

FP8 refers to service-centered view resulting in customer orientation and relationships between the stakeholders (Vargo & Lusch, 2008) which was discussed along with FP1. Service is fundamentally defined in terms of customer-determined benefit. This means S-D logic view is inherently customer-oriented. (Vargo & Lusch, 2008a.)

FP9 suggests that all social and economic actors are resource integrators. This premise implies that the context of value creation is networks of networks

that are resource integrators. (Vargo & Lusch, 2008a.) This premise is strongly related to co-creation of value and will discussed later in the present thesis.

According to FP10 value is always uniquely and phenomenologically determined by the beneficiary. This likewise is strongly related to value co-creation and is discussed more in-depth later in this thesis. However is should be stated that the beneficiary is the customer in this context. Also it can be argued that the part "uniquely and phenomenologically determined" seems just another way of expressing the subjective and experiential nature of value-in-use and value creation in the customer-end.

2.6.2 Applications of service-dominant logic: Service science

Service-dominant logic has been called a theory which it is not. S-D logic is a mindset to approach social and economic phenomena. S-D logic is not meant to compete against the traditional theories of marketing but to rather extend them. However S-D logic might provide a foundation for developing a new theory of marketing. (Vargo & Lusch, 2008a, 2008b). S-D logic has already provided a foundation for service as a science (Spohrer, & Maglio, 2008).

One challenge in developing service innovation is that the nature of services is interdisciplinary. Innovation takes place in technological, social, client demand and business sides of different disciplines. Need for studying service as science has been expressed because of this. (Spohrer & Maglio, 2008.)

In service science S-D logic has been applied not only to companies and customers but to all economic entities such as individuals, families, societies, companies and nations. These entities are called service systems and they are value co-creation configurations of resources. The smallest service system is an individual interacting with other service systems. The biggest service system comprises of the global economy. In service science the traditional produces-consumer distinction is seen as inappropriate (Vargo & Lusch, 2008a; Spohrer & Maglio, 2008; Vargo, Maglio & Akaka.) Service is seen as the application of competences and the proper unit for analyzing service-for-service exchange is the service system. Service science is the study of service systems and the co-creation of value that happens within the configurations of resources (Spohrer & Maglio, 2008; Vargo, Maglio & Akaka, 2008). Service science mergers organizational and individual understanding with business and technological understanding aiming to categorize and explain the diversity of service systems and their interactions. The resources can be categorized to people, technology, organizations and shared information. This categorization is significant since it includes rights, resources as property, physical entities and social entities. (Maglio & Spohrer, 2008.)

To summarize S-D logic is the philosophical foundation of service science. The service system is the fundamental and theoretical construct of service science (Maglio & Spohrer, 2008). Service science is focused on the study of service systems and the co-creation of value between service systems (Vargo, Maglio & Akaka, 2008). Service science is still under development. Its potential has been

understood but it's yet to be developed into a theory or a robust science (Spohrer & Maglio, 2008). However the service science literature seems to have extended and explained S-D logic well. Value co-creation is widely discussed in service science literature and therefore service science view will be very present when discussing value co-creation in the present thesis.

2.6.3 Resourcing

Vargo and Lusch (2004) categorize resources as tangible, intangible, operand and operant resources. Tangible means something that can be touched, for example a manufactures output. Intangible means something that can't be touched, such as skills. Operand resources are resources on which an operation is performed to produce a result. Operant resources on the other hand are resources that are used to act on operand resources and other operant resources (Vargo & Lusch, 2004.) In S-D logic literature tangible and operand resources are often paired together, as are intangible and operant resources (Vargo & Lusch, 2004; Vargo & Lusch, 2008a, 2008b; Vargo, Maglio & Akaka, 2008).

Operand resources are the primary resources in G-D logic. A typical example of an operand resource is standardized tangible good, such as a toothbrush. However in the goods-dominant logic the consumers are often seen as operand resources as well. Expressions such as "segmentation" and "promote to" illustrates this phenomenon. (Vargo & Lusch, 2004.)

Operant resources are not static resources like operand resources. They are resources that produce effects. Skills and knowledge can be viewed as the most important resources which are the source to obtaining competitive advantage. Operant resources are often intangible and invisible. (Vargo & Lusch, 2004.) In an organization the operant resources are core competences (Vargo & Lusch, 2004) such as communication, involvement and commitment (Prahald & Hamel, 1990). Organizational processes that comprise of these competences are of course operant resources as well (Vargo & Lusch, 2004). On a general level all economic entities are resource integrators (Vargo & Lusch, 2006). Operant resources *are* not but they rather *become*. (Vargo & Lusch, 2004.)

According to Grönroos (2008) goods and services are used as input resources with other resources such as skills, knowledge and competences to create value in customer's value generation processes. Grönroos (2011) has also criticized the distinction between tangible and intangible resources stating that sometimes goods can be perceived intangible as well, a used car as an example. Moreover a service activity such as a fast-food service and delivery can be viewed as tangible (Grönroos, 2011).

2.6.4 Value creation, value co-creation, value co-destruction and value proposition

In G-D logic the value creation focuses on the firm's output and price and the customer is seen as the value destroyer (Vargo, Maglio & Akaka, 2008). Also in

the early value co-creation literature (Normann & Ramirez, 1993) the company had a role of "value inventor" that enables the customers to participate. In S-D logic the value is born in the application of operant resources that sometimes are transmitted through operand, tangible resources (Vargo & Lusch, 2004). Therefore value co-creation happens in the combined efforts of firms, employees, customers and other stakeholders but the value is determined by the customer (Vargo, Maglio & Akaka, 2008). In S-D logic value creation entails a process that increases the customer's wellbeing so that the customer becomes better off in the process (Grönroos, 2008; Vargo & Lusch, 2008a). Value creation can also take a negative turn, which means the customer is better off worse. (Grönroos & Voima, 2013). This is also referred to as value co-destruction (Plé & Cáceres, 2010). According to service science literature (Vargo, Maglio & Akaka, 2008) the service systems interact through mutual service exchange relationships. Through the relationships the adaptability and survivability of the service systems connected to each other improves by allowing integration of resources that are mutually beneficial (Vargo, Maglio & Akaka, 2008).

According to S-D logic and Nordic school of thought service logic value is determined when the customer makes use of the provided resources. The resources alone don't entail value for the customer until they are used. Therefore value creation happens through value-in-use (Vargo & Lusch, 2004, 2008a; Vargo, Maglio & Akaka, 2008; Grönroos, 2006, 2008, 2011; Grönroos & Voima, 2013.). Vargo and Lusch (2008a) view the customer as value co-creator, whereas Grönroos (2008) views the customer as the sole value creator when value creation is approached as a value-in-use process.

Value proposition is intermediary to the value co-creation process. Value propositions build relationships among the services systems (Vargo, Maglio & Akaka, 2008). Grönroos (2011) defines the company as the value facilitator. The value proposition is accepted, rejected or unnoticed by the customer or a service system (Vargo, Maglio & Akaka, 2008). The service systems are connected through the company facilitated value propositions, customers' acceptance of the propositions and their evaluation of the value (creation of value) (Spohrer & Maglio, 2008)

One distinction about to help understand value co-creation may be the view provided by Grönroos (2011) where value creation as the customer's value-in-use process and value co-creation as an all-encompassing process are distinguished. This view is described in the figure below (figure 2).
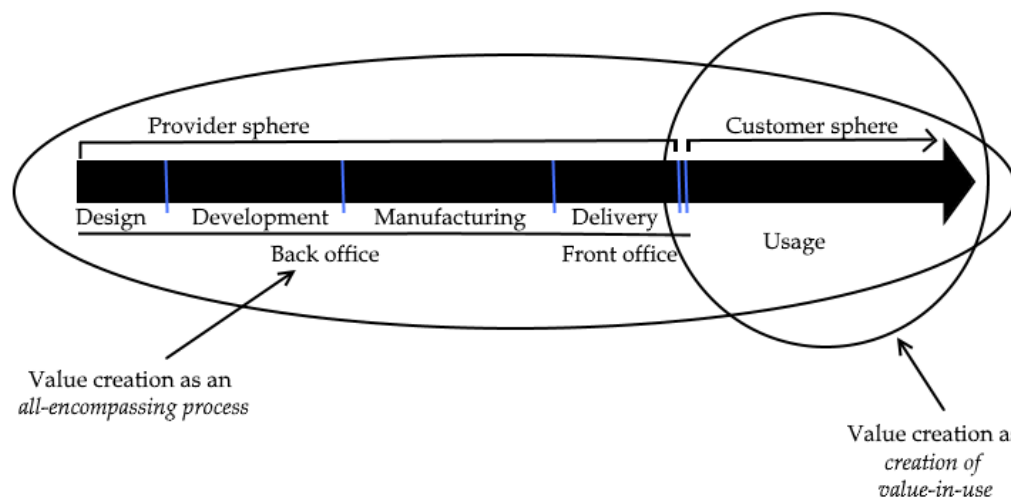
FIGURE 2 Value creation as the customer's creation of value-in-use vs. an all-encompassing process including provider and customer activities (Grönroos, 2011)

 As mentioned in the foundational premises of S-D logic according to Vargo and Lusch (2008a) the company can only make value propositions. Grönroos (2008, 2011) has questioned this view stating that from the point of view of provider's service logic this cannot be true. If the company can only make value propositions and the customer is the value co-creator who then is the actual value creator? This is one of the main topics as to why value co-creation has been viewed as an elusive topic. It has been approached as an all-encompassing process and a value-in-use process as if they were one simultaneous process. If customer is always the co-creator of value, but the co-creation happens in the value network with all the stakeholders, stating that value is determined by the customer doesn't really clarify the roles in the actual value co-creation.

Grönroos (2008, 2011) suggests that through interaction the company is not restricted to only proposing value, but it can also participate in the value fulfillment as a co-creator of value. Grönroos (2011) also argues that if the company can enter the customer-sphere through interaction, so should the customer be able to enter the provider-sphere as a co-producer of service, since interaction is a merged interactive process. Thus the reformulation from the customer being a co-producer (Vargo & Lusch, 2004) to co-creator (Vargo & Lusch, 2008) might actually have made the concept of value co-creation even more elusive than it was before. The roles might be easier to understand if co-creation and co-production were handled as separate processes where the former is about the creation of value through value-in-use, and the latter is about part-taking to developing and producing services. This view is also supported by the work of Tuunanen, Myers and Cassab (2010) where participation in service production is defined as a concept of its own.

To summarize value creation is the customer's creation of value-in-use and value co-creation is a function of interaction (Grönroos & Voima, 2013). Value

proposition is potential value provided by the company and realized by the customer.

2.6.5 Interaction and networking

According to Vargo and Lusch (2004) the companies can have long-term viability only if they learn together and collaborate with other channel and network partners. The service-centered view is about collaborating with and learning from customers and adapting to their needs. Different outcomes such as financial outcomes are not something the company should aim to maximize but to learn from. Through learning the company should serve the consumer better and improve their performance. Producing standardized goods are not only perishable and nonresponsive to consumer needs but they also add marketing costs. Therefore consumers need to be involved. (Vargo & Lusch, 2004.) This is also in line with the modern customer relationships management (CRM) literature according to which the company should learn about the consumer so it can understand their value to the company and their individual needs (Peppers & Rogers, 2011, p. 186).

After the release of Vargo's and Lusch's (2004) article other scholars have pointed out that the interactive and networked nature of service-dominant logic was not discussed explicitly enough (Grönroos, 2006). Gummesson (2008) points out that service is not created only by the provider and the customer. It is created in a network of activities that involve a group of stakeholders (Gummesson, 2008).

Resource integration is a concept easily confused with value creation. Whereas value creation describes the process of how value is created, value integration can be viewed as a term that describes, that resources are integrated in a network by different stakeholders in their own ends (Lusch & Vargo, 2006).

To summarize, the interaction orientation and the network orientation are present in FP6, FP8 and FP9, but the need for underlining their role has been expressed with a good reason. In contrast to S-D logic in service logic represented by Grönroos (2008) the interaction is certainly more central. According to Grönroos (2008) interaction rather than exchange is the fundamental construct in marketing, because exchange is not aimed towards consumer's value co-creation but towards the value facilitation and transactions.

2.6.6 Summary of Service-dominant Logic

The key differences between G-D logic, S-D logic and Service Logic are presented in the table below (table 4).

TABLE 4 Comparison between dominant logics and schools of thought of marketing

	Role of goods	Re-sources	Ap-proach	Value delivery	Value crea-tion	Commu-nication	Fundamen-tal con-struct of marketing
Goods-domi-nant Logic (Kotler, 1984)	Final products	Oper- and re-sources	Market-ing goods, 4P	Price	Value em-bedded in the physical product	One way from the company to the consumer	Transaction through sales
Ser-vice-domi-nant logic (Vargo & Lusch, 2004)	Transmit-ters of services	Operant re-sources: knowle dge, skills, compe-tences	Service-market-ing	Value proposi-tion made by the pro-vider	Customer always co-creates value integrating the resources provided by the company	Learning from custom-ers	Service is the funda-mental ba-sis of ex-change
Service Logic, Nordic school (Grönr oos, 2008; 2006)	Value-support-ing resouces if there's interac-tion. If not, goods are bought as goods	Goods and services used as input re-sources with skills	Interac-tive market-ing	Value proposi-tion made by the pro-vider. Involve-ment in value fulfill-ment (co-creation) through interac-tion.	Customer creates value. Through in-teraction n the company can participate and co-create value	Relation-ships and interac-tion	Reciprocal value crea-tion is the fundamen-tal basis of business, with service as a mediat-ing factor.

Despite widening the understanding of marketing, service-dominant logic view has been accused of being too interaction- and production-centered and thus too provider-dominant over customer-dominant. Better understanding on how value emerges for customers and how they construct their experiences is re-quired. (Heinonen et al., 2010.) A certain type of emerging of disciplines seems to have started to happen among the marketing and user experience communi-ty. The user experience community has realized the need to include value as a key component of user-experience and assess it instead of viewing all experi-ences equally valuable (Roto, 2007). Likewise the marketing community has acknowledged the need to study more the experiential side of marketing (Tuunanen et al., 2010). It must be noted that experience is anything but an easy field of study due to its subjective nature (Hassenzahl & Tractinsky 2006).

3 VALUE CO-CREATION IN CONSUMER INFOR-MATION SYSTEMS

In this chapter the framework for value co-creation in consumer information systems is presented. First the framework is introduces on a general level. Then the theoretical basis of the components of the framework is further discussed.

3.1 Foundation for the framework for value co-creation in consumer information systems

As mentioned in the previous chapter, service-dominant logic and service science have had a big impact on modern marketing but until recently few practical applications of service science have emerged.

Tuunanen et al. (2010) define consumer information systems (CIS) as systems that enable consumer value co-creation through the development and implementation of information technology enabled processes that integrate system value propositions with customer value drivers. This definition of CIS merges the traditional information technology (IT) foundation for CIS and the nature of service as seen through a service-dominant logic perspective.

The framework by Tuunanen et al. (2010) approaches value co-creation through the value-in-use perspective. This perspective covers both utilitarian and hedonic value (Holbrook, 1996). In the traditional IS (information systems) literature the value perspective of the organizational users of information systems has been seen mainly viewed as utilitarian (Lamb & Kling, 2003). However the consumers create hedonic value as well (Tuunanen et al., 2010; Agarwal & Karahanna, 2000; Holbrook 1996, Shiv & Fedorikhin, 1999). This is in line with the user experience literature that recognizes the hedonic side along with the pragmatic side (Hassenzahl & Tractinsky, 2006) and also the value side of experience (Roto, 2007). In addition to the experiential view on value the customers are also becoming more active participants of the actual IS development (Tuunanen et al., 2010; Ostrom et al., 2010).

The conceptual framework for value co-creation in consumer information systems provided by Tuunanen *et al.* (2010) comprises of two main sections. The left side of the frameworks represents the three CIS value propositions and the right side represents the three customer value drivers. The system value propositions are "construction of identities", "social nature of use" and "context of use". The customer value drivers are "participation in service production", "service process experience" and "goals and outcomes". The framework for value co-creation in Consumer Information Systems (Tuunanen *et al.*, 2010) is presented in the figure below (figure 3).
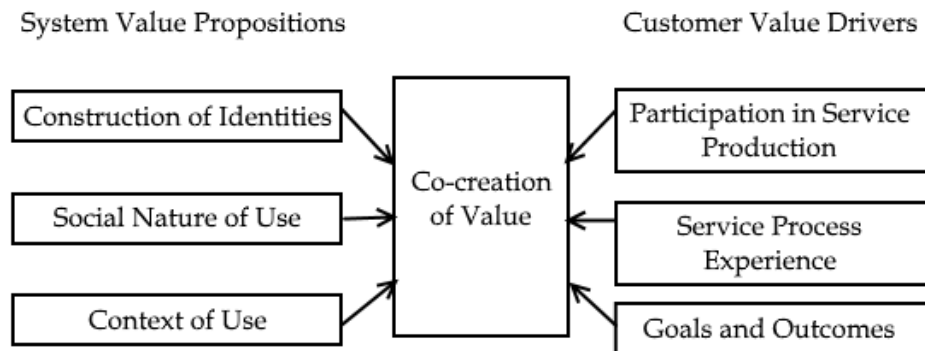
FIGURE 3 Framework for Value Co-Creation in Consumer Information Systems (Tuunanen et al., 2010)

The theoretical foundation for the system value propositions and customer value drivers and examples of them in weight training and coaching context are presented in the table below (table 5) and then further discussed.

TABLE 5 System value propositions and customer value drivers. Adapted from Tuunanen et al. (2010)

Aspect of consumer behavior	Theoretical basis	Examples
Construction of identities	Social Actor Theory (Lamb, 2005, 2006; Lamb and Kling, 2003). Social construction of identity (Creed et al., 2002; Simon et al., 2009)	Personal goals in weight training and coaching.
Social nature of use	Social Actor Theory (Lamb, 2005, 2006; Lamb and Kling, 2003). Political Ecology of requirements (Bergman et al., 2002)	Communicating with between people training and people coaching.
Context of use	Context of Information Systems Use (Goodhue, 1995, Orlikowski *et al.*, 1995), Context Aware Computing (Dey & Abowd, 2000; Schilit *et al.*, 1994). Cultural context (Myers, 1999; Myers & Tan, 2003, Tuunanen *et al.*, 2006).	Using the application on the road or at home.
Participation in service production	Service dominant logic (Vargo and Lusch, 2004, 2008a, 2008b), Service Logic (Grönroos 2008), Service/system co-production (Karlsen, 2008; Pedersen, 2005), lead-user engagement (von Hippel, 1986, 2001; von Hippel & Katz, 2002)	Sending error reports and suggestions. Sending anonymous user data.
Service process experience	The Psychology of Optimal Experience (Csikszentmihaly, 1991), Consumption Patterns (Westbrook & Oliver, 1991), Cognitive absorption (Agarwal & Karahanna, 2000)	Experiencing flow while using a weight logging tool by smart phone while training.
Goals and outcomes	Hedonic Utility (Holbrook et al., 1984, Kahneman et al., 2003), Customer value typology (Holbrook, 1996), User Acceptance of Information Technology (Venkatesh et al., 2003), Consumer trade-offs (Green and Srinivasan, 1990, Ostrom and Iacobucci, 1995)	Achieving personal goals of by becoming stronger, building muscle and losing fat.

In the following subchapters the theoretical foundation for the system value propositions and customer value drivers are further discussed.

3.2 Theoretical basis of System Value Propositions

Here the theories behind the system value propositions of the CIS framework are presented. In the traditional literature discussing IS development the core of the IS planning process is to gather data from the users to gather requirements for the service. (Byrd et al., 1992; Davis 1982.) Since then many requirement gathering techniques have emerged.

3.2.1 Construction of Identities

This aspect of consumer behavior is based on the social actor theory by Lamb *et al.* (2003, 2005, 2006). Here the users or consumers are conceptualized as actors due to social and networked environment they act in. The individuals work together as teams as opposed to working in isolation (Lamb *et al.*, 2003, 2005, 2006). It is also suggested in the previous studies that the actors may have identities that are linked to the IT artifacts that they are using. (Lamb & Kling, 2003; Creed, Scully & Austin, 2002; Simon, Boudreau & Silverman, 2009). Lamb and Kling (2003) argue that these artifacts are used to express and construct identities. The identity can be expressed through personalizing the artifacts. Web avatars work as a good example of expressing one's web identity.

It must be noted that the conceptualization of actors is too vague in the scope of value co-creation, and in the present thesis the terms customer or consumer are used.

3.2.2 Social Nature of Use

Central to the social actor theory is that the social actors work in a dynamic environments when using ICT applications. The actors use multiple applications, they have different roles and the interact in different social contexts. (Lamb & Kling, 2003). Lamb and Kling (2003) divide the social actors to four dimensions that are affiliations, environments, interactions and identities. An obvious contemporary example of the social nature of use is the use of different social medias.

3.2.3 Context of Use

The context of use has been suggested have a significant effect on user experience (Dey & Abowd, 2000; Goodhue, 1995). Schilit, Adams and Want (1994) describe systems that examine and react to individual's changing context. These systems can promote and mediate people's interactions with technology and other people. The context of use is always dependant on the environment which

dictates which always makes the information limited in a way or another. (Schilit et al., 1994.)

Schilit et al. (1994) define context-aware systems as systems that adapt according to the location of use. They collect information on the nearby people, hosts and accessible devices. Three important aspects to the context of use are where the user is, who is the user with and what resources are nearby. Context-aware computing is divided to four categories which are proximate selection, automatic contextual reconfiguration, contextual information and commands, and context-triggered actions. Proximate selection is a UI (user interface) technique where the objects nearby are expressed in the UI. An example of this would be the UI of Google maps to give suggestions about restaurants nearby. Automatic contextual reconfiguration means adding and removing components and altering the connections between them. An example of this would be servers and connections to the users, or more specifically communicating more information of your best friends' actions than the peoples' you don't know that well. Contextual information and commands is about exploiting the information of peoples' whereabouts, predicting their actions and communicating this useful information to people. An example of this would be the system telling you that near to you there is a restaurant of a fast-food chain where you went some time ago in a different location. The command part of this can be for example printing a document to the nearest printer. The context-triggered actions are straightforward if-then rules that specify how context-aware systems should adapt. An example of this would be the system informing about the best nightclubs of the town after the user has been sitting in a pub for a long while. (Schilit *et al.*, 1994.) As we can see the technology has changed immensely since the release of the article by Schilit *et al*. (1994) but these categories of the context of use can and have dictated some innovative ideas.

However the context of use is not only a location-based entity. In addition to this the cultural context has been argued to have a significant effect on the user requirements (Tuunanen, Peffers, Gengler, Hui & Virtanen, 2006) and system use (Myers, 1999; Myers & Tan, 2003).

3.3 Theoretical basis of Customer Value Drivers

Here the theories behind the customer value drivers of the CIS framework are presented. The CIS framework inherits the traditional system development practices but broadens the IS planning process through incorporating the voice of the client (Griffin & Hauser, 1993; Tuunanen *et al*., 2010). This customer-orientation is approached through service-dominant logic of marketing (Vargo & Lusch, 2004), deeper understanding on utilitarian and hedonic customer value (Holbrook, 1996) and experiential aspects such as the concept of flow (Agarwal & Karahanna, 2000; Csikszentmihaly, 1991; Hill *et al.*, 2002).

3.3.1 Participation in Service Production

Due to the scope of the present thesis the user involvement and participation is approached from the consumer perspective as opposed to organization perspective. A significant amount of IS development user involvement literature has been published in an organizational setting (See Goodhue, 1995). Some studies with consumer-orientation also exist (see von Hippel, 1986, 2001; von Hippel & Katz, 2002).

Von Hippel *et al.* (1986, 2001, 2002) suggest participating the lead users of the service. This participation can happen through toolkits that help the users prototype, design and test the service. Tuunanen and Rossi (2004) propose quick prototyping as a partial solution to participating the customer. Prototyping as a concept has also been criticized due to its often method-centric view (Houde & Hill, 1997). Houde and Hull (1997) argue that rather than focusing on which method or tool was used to prototype, more important is to focus on the purpose of the prototype.

Participation has been a controversial concept in S-D logic literature. It has been viewed as co-creation (Vargo & Lusch, 2008a), co-production (Grönroos, 2006), learning and dialogue (Peppers & Rogers, 2011, p.186) to name a few perspectives. According to the Nordic school of thought participation in service production can be viewed as co-production, where consumption and production are at least partly simultaneous processes as suggested by Grönroos (2006). Co-production should not be confused with co-creation of value that emerges through value-in-use. Therefore the participation refers to the customer having a role in making value propositions by entering the provider sphere through interacting with the company, and therefore it's a separate process (Grönroos, 2013). This is one central concern as to why value co-creation has been seen as an elusive concept. It was the original premise of co-production (Vargo & Lusch, 2004) that was formulated to co-creation (Vargo & Lusch, 2008a) but it can be argued that these are two separate concepts both of which have a role in service development. This would mean that the consumer is the creator of value and the co-producer of service.

3.3.2 Service Process Experience

In their CIS framework, Tuunanen *et al.* (2010) present the concept of flow as the central concept of service process experience. After Csikszentmihalyi (1988) coined the flow experience term, the concept of flow has become one of the central objects of user experience research (Pilke, 2004; Forlizzi & Battarbee, 2004; Agarwal & Karahanna, 2000; Ghani & Deshpande, 1994).

Flow means a state of being where the individual is intensely concentrated and feeling enjoyment while performing an activity effectively without being consciously aware of their movements and tasks performed. This sensation of experience can be described as an optimal experience since the work done is very effective but the individual also enjoys their work. Factors contributing to

the flow experience are that 1) the satisfaction must emerge from the activity itself 2) the user has intrinsic motivation to perform the task 3) the activity must challenge the user, merge awareness and actions of the user, require a full concentration and give feedback and 4) The person sensing the flow experience must have goals, be in control, not feel self-conscious and lose the track of time. (Csikszentmihaly, 1991.)

According to Ghani and Deshpande (1994) flow is significantly linked with use behavior which is linked to the extent of computer use. Important variables when measuring flow are the individual's sense of being in control and the level of challenge the user perceives when using a computer. The sense of control is more important in high task-scope jobs with high variety, identity, autonomy and feedback. The perceived level of challenge is more important in low task-scope job with lower variety, identity, autonomy and feedback. (Ghani & Deshpande, 1994.)

3.3.3 Goals and Outcomes

Central questions regarding the goals and outcomes of the CIS use concerns the hedonic psychology (Kahneman, Diener & Schwarz, 2003) and the perceived utility (Venkatesh, Morris, Davis & Davis, 2003; Venkatesh, Thong & Xu, 2012). This concepts are linked to the value-in-use (Vargo & Lusch, 2004) and the typology to the customer value (Holbrook, 1996). Essentially the goals and outcomes are the things that govern the perceived hedonic and utilitarian value which comprise value-in-use which leads to value creation by the customer. The big challenge here is to determine how system features can create hedonic utility (Tuunanen *et al.*, 2010). Perceived enjoyment and ease-of-use seem to have a stronger impact on the intention to use than perceived usefulness (van der Heijden, 2004). Therefore hedonic value seems like a strongly experiential concept. Due to the subjective nature of experience, hedonic value is a lot more difficult to measure and communicate to design patterns than utilitarian task-centered activities.

3.4   Summary and discussion on CIS framework

To summarize the framework for value co-creation in consumer information systems comprises of system value propositions and customer value drivers. The system value propositions are "construction of identities", "social nature of use" and "context of use". The customer value drivers are "participation in service production", "service process experience" and "goals and outcomes". (Tuunanen *el al.*, 2010.) These two main sides reflect the provider-consumer sides discussed in service-dominant logic and service science literature (Vargo & Lusch, 2004, 2006, 2008a, 2008b; Vargo, Maglio & Akaka, 2008; Maglio & Spohrer, 2008; Grönroos 2006, 2008, 2013).

One challenge that remains in CIS development and all fields where experience is taken into account as a design objective, is how and when should the customer be involved in the service development process (Tuunanen et al., 2010; Kujala, 2003). Due to the individual motivations of consumers this a more challenging question in CIS context than in an organizational information systems context (Tuunanen *et al.*, 2010). If we accept that experience is a subjective concept for all individuals (Hassenzahl & Tractinsky, 2006), it may be impossible to measure experience and communicate the results in a reliable way. Therefore we may have to settle for designing for the experience rather than designing the experience itself (Hassenzahl, 2006). In this context the concept of flow is likely useful. However studying only flow might not suffice as an experiential subject of study. For example studying trust as an experience might be another valuable field to study the experience-side of service. The statement "We need to start designing and developing systems *for* consumers, as contrasted *with* users." (Tuunanen et al., 2010) seems to contradict with the S-D logic marketing orientation (Vargo & Lusch, 2006) where the transitional concept of "market to" is replaced with the S-D logic concept "market with". Due to the participative nature of CIS development, designing and developing with consumers as contrasted for users seems more logical.

4 RESEARCH METHODOLOGY

Here the research methodology is presented. First the research approach is described. Then the research case field is described. Then the actual research data collection is described. Finally the data analysis of the research data collection is described.

4.1 Research approach

Research methods can be classified in various ways. One of the most common ways is to distinguish research between quantitative and qualitative research. Quantitative methods were developed principally for natural sciences whereas qualitative methods were developed for social sciences. However later on quantitative methods such as surveys have been used in social sciences as well. (Myers, 1997.)

The motivation for choosing qualitative research over quantitative is the human´s ability to talk, which is something that doesn´t appear in the natural world outside humans. The qualitative methods are based on the social and cultural contexts described by humans (Myers, 1997).

In addition to the broad categorizations between quantitative and qualitative research there are philosophical perspectives for research methods. One three-fold categorization is to divide the qualitative methods to positivist, interpretive and critical research. According to positivism the reality is objectively given and can be described by measurable properties that are not dependent on the observer. The interpretive studies rely on the assumption that the observer has access to reality through social constructs such as language, consciousness and shared meanings. In critical research the reality is historically constituted, and it is produced and reproduced by people. (Myers, 1997.)

We have reached the point in IS research where many different approaches are accepted as appropriate, ranging from quantitative to qualitative, from positivist to imperative. Due to this wide range of selections one has to be

aware of the potential positive and negative effects when selecting the research method. (Myers, 1999.)

As the present thesis has its objective to shed light on the co-creation of value, and due to the social, experiential and subjective nature of value co-creation, the chosen method is a qualitative and interpretative case study. Case studies strive to describe a unit of analysis (Myers, 1997), in this case the people weight training and the coaches offering their services for weight training. Another motive for choosing said method is the characteristic objective of a case study to answer "how" and "why" questions (Benbasat et al, 1987) which is well suited for understanding peoples´ values and the means that serve these values.

4.1.1 Research case field

The case field selected for the present study is weight training and coaching within it. The goal is to explore how people who do weight training and people who offer coaching for weight training co-create value using digital services.

The unit of analysis may be an individual, a group, an organization or an event (Darke et al, 1998). In the present thesis the units of analysis are the individuals, both people weight training and the people offering coaching services for weight training. With these two roles the goal is to get a broad view on how the users co-create value in digital services that support weight training and coaching within it. From here-on the people weight training are referred to as clients and the people providing coaching services as coaches.

The case digital service in the present thesis is a yet-to-be-developed service called GetTrained whose objective is to unite the people weight training and people offering coaching services for weight training. In addition to learning about the value co-creation in weight training context, the present thesis also works as a provisional concept definition document for such service.

4.1.2 Recruiting the participants

Before the actual interviews for the thesis three pilot interviews were conducted. After the pilot interviews the actual participants for the study we recruited using a technique called snowballing (Goodman, 1960). In the snowballing technique the first group of people are asked to name people who would fit the profile of the study. Then the people of the second group are likewise asked to name people fitting the profile. The process is repeated until the sample meets the requirements of the study.

In the present thesis after finalizing each pilot interview, the participants were asked if they knew any people that would fit the profile of the study. After that the potential participants were contacted and while a few people refused to be interviewed the majority were willing to participate. The first 10 participants were asked to tell what in their mind would be most important in the use of the case application. This data was later on used to formalize the stimuli list for the

interviews, having the provisional responses linked to the CIS model (Tuunanen et al., 2010) which will be further explained in this chapter.

In parallel to snowballing technique participants were recruited from gyms in Spain and Finland as an internal inquiry.

Of the 20 participants 18 were interviewed as clients whereas 2 were interviewed as coaches. 19 of the participants were male whereas one participant was female.

4.2   Data collection technique

According to Myers (1997) qualitative research makes use of qualitative data such as interviews, observations, documents in order to understand and explain social phenomena. The selected technique for gathering data for the present thesis was interviews.

To understand why people view some IS features more important than others, the framework on critical success chains (CSC) introduced by Peffers et al. (2003) is used in the present thesis. The CSC framework models the relationship between system attributes, consequences and values. CSC has its basis in a methodology called critical success factors (CSF) and personal construct theory (PCT). The goal of CSF is to identify the most critical requirements that the firm depends on. PCT was modeled by the psychologist George Kelly to understand how his patients viewed the world. The patients observed the states of the world differently, the consequences of those states and their impacts on the personal values. These impacts, also known as personal constructs are a result of peoples´ individual observations and interpretations. (Peffers et al., 2003.)

To carry out the interviews in a fashion that support the attribute-consequence-value relationships, an interviewing technique called laddering (Reynolds and Gutman, 1988) was selected for the present thesis. Originally the laddering technique was developed to understand the relationships between the means and ends of consumption in order to explain the consumer behavior (Reynolds and Gutman, 1988). According to Peffers et al. (2003) the laddering technique can collect chains of features (attributes), reasons (consequences) and values from a number of participants. The chains are aggregated to network models of how the participants interrelated constructs. This data can be used to develop new features that have potentially a high customer value. (Peffers et al., 2003.)

4.2.1 Applying the CIS model to the case service

After contacting the first 10 participants and asking them what in their mind would be most important in the use of GetTrained, their responses were used to formalize a stimuli list linked with each element of the CIS model (Tuunanen et al., 2010). These stimuli results were used as a base for the semi-structured interviews that would be carried out with each participant. The stimuli themes are presented below in table 6.

TABLE 6 CIS model (Tuunanen et al., 2010) elements and stimuli themes developed for the present thesis

Theme ID	CIS elements	Stimuli theme
1	Construction of identities	Me as the user of GetTrained
2	Social nature of use	The social side of GetTrained
3	Context of use	The use contexts of GetTrained
4	Service process experience	The use and service experience of GetTrained
5	Participation in service production	Having an impact on GetTrained
6	Goals and outcomes	Goals through the use of GetTrained
7	Additional theme	A theme chosen freely by the participant

4.2.2 Research Data Collection

The themes chosen by participants along with their gender, occupational status and the selected role is described below in table 7.

TABLE 7 Themes chosen by the participants

Interview ID	Occupational status	Gender	Role as a participant	Themes chosen
1	Entrepreneur	Male	Coach	1, 6
2	IT consultant	Male	Client	2, 4
3	Programmer	Male	Client	2, 6
4	Unemployed	Male	Client	1, 4
5	Brewmaster	Male	Client	2, 6
6	Money handler	Male	Client	2, 6
7	Nurse & masseur	Male	Client	1, 2
8	IT system designer	Male	Client	1, 4
9	Unemployed	Male	Client	1, 3
10	Student	Male	Client	1, 6
11	Research assistant	Male	Client	4, 6
12	E-commerce maintainer	Male	Client	1, 4
13	Application designer	Male	Client	2, 6
14	Part-time health consultant / unemployed	Male	Client	4, 6
15	System expert	Male	Client	4, 6
16	QA specialist	Male	Client	4, 6
17	PhD student	Male	Coach	1, 2
18	Student	Male	Client	2, 4
19	Senior police officer	Male	Client	1, 4
20	Marketer	Female	Client	2, 4

20 participants were interviewed in total. 18 of the interviews were done via Skype, which is an internet phone call service. 2 of the interviews were done face to face.

The participants were informed that the interviews would be handled confidentially, anonymously and within non-disclosure agreement. The participants were also informed that the interviews were to be recorded to aid the analysis phase of the study. 19 of the interviews were done in Finnish, whereas one of the interviews was done in English. Later on all the notes of the interviews were translated to English.

In the beginning of each interview the participants were informed about the goal of the research and the main information regarding the case application. After that the stimuli list was presented to the participants and they were asked to, if possible, select two most important themes of the six themes. In the case of

not seeing the pre-formalized themes necessary the participants were also able to choose their own theme. The stimuli list document can be found in the end of this thesis document (Appendix 1).

The frequency of choice of each theme among the participants is presented below in table 8.

TABLE 8: Frequency of themes selected by the participants

Theme ID	CIS elements	Frequency
1	Construction of identities	9
2	Social nature of use	9
3	Context of use	1
4	Service process experience	11
5	Participation in service production	0
6	Goals and outcomes	10
7	Additional theme	0

The themes that the participants were interest in the most were the fourth theme called "service process experience" and the sixth theme called "goals and outcomes" with the first theme called "construction of identities" and the second theme called "social nature of use" coming close in their popularity. As we can see the participants were not interested in the fifth theme called "participation in service production" nor did they choose theme 7 which would have been an own theme they could´ve invented.

Each theme was started with the question "Which features that occur to you could serve you in this particular theme?" which would often lead to one or more features. Within each feature the participants were asked "Why is this feature important to you?" and this type of questioning would lead to consequences related to that particular feature or attribute. These why-type of questions were repeated for the consequences as well, and they were asked until the participant could name a particular value or a series of values related to the feature and its consequences, or they couldn´t come up with any more answers. In the case of not being able to come up with any more answers the interview continued to other themes or features. In the end of each theme the participants were presented the possibility to add anything related to the theme that was being discussed. This whole process was repeated for the other theme chosen by the participant as well.

The objective for the interviewer was to guide the interview through features, consequences and values for each feature related to each theme.

During the interview attributes, consequences and values related to each selected theme were entered in a Microsoft Excel document. Each feature would normally result in one chain of the feature (attribute) itself and the following consequences and values related to it. This procedure of chaining attributes, consequences and values follow the one chaining process described by Peffers

et al. (2003). In the end of each interview the participant was asked to rank each attribute starting with the most important one by ranking it with the value 10. The next important attribute would have the value 9. This would be repeated until the participant could no longer distinguish any importance among the remaining attributes. After each interview the notes of the interview were cleaned and in some occasions the recorded material was already revisited to add more notes.

4.3 Data analysis

An interpretive clustering analysis was used for the raw interview material. After doing all the interviews they were revisited again through the recordings.

Each chain had an attribute, a consequence and a value field in addition to the raw data entered in each chain. During the clustering analysis the resulting attribute of the chain would be assigned to this field. The same attribute would also appear in other chains that handling the same attribute, which would cluster the data to make the interpretation of it more meaningful. Then the same clustering process was repeated for consequences and values.

When revisiting the material the goal was to find new attributes, consequences and values that were possibly overlooked in the interviewing phase. If there was a new attribute in the original chain that was not assigned to the attribute field yet, the whole row would be copied and the attribute would be assigned to its corresponding field. This process is called double-coding and its main function is to prevent data loss in the analysis phase. This double-coding process was repeated also for the consequences and values by assigning them to their corresponding cluster fields.

In the case of the chain not having an attribute, consequence or value, the corresponding cluster field in the document was marked as N/A (not available). Before the double coding and clustering there were 154 chains. After the double-coding the attributes, consequences and values and clustering them there were 318 chains.

After the double coding and the clustering phase the chains were used to draw the theme maps which describe the attribute-consequence-value relationships collectively within all the interviews inside each particular theme. These theme maps were created to deepen the understanding of the interview data and help answer the research questions on value co-creation in the digital services supporting of weight training and coaching within it.

5 Findings

Here the findings of the thesis are presented. First distribution within the themes is presented. Then the theme maps are presented and described.

5.1 Data distribution within the themes

In the present study the CIS model (Tuunanen et al., 2010) was used as a framework for value co-creation in digital service supporting weight training and coaching in weight training.

The stimuli list used in the interviews was created based on the six key components of the CIS model and the provisional responses of the participants regarding the most important characteristics of the case service.

The distribution of the attributes within each theme along with a global rank sum which describes perceived importance and its occurrence among the double coded attribute-consequence-value chains is presented below in table 8.

TABLE 8 Distribution of attributes within each theme with the rank sum of each attribute

Attribute name	Rank sum	Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6	Σ
Calendar	69		3				5	8
Coach's profile with blog	372	32	3		16			51
Customer relationship page	79	4			1		4	9
Discussion platform with user groups	374	22	22	2	6		16	68
Error reports	6				1			1
Gamification	12		2					2
Group coaching	18		2					2
Multi platform User Interface	110	1			13			14
Online course platform	80						10	10
Responsibility page	3				1			1
Shared programs for training and nutrition	88	2	1	1	2		7	13
Shared stories, photos and videos	271	4	28	1	3		7	43
Tool for searching coaches and other users	263	7	3		19		4	33
Tool for tracking and analyzing progress	530	24	3		10		26	63
Total		96	67	4	72	0	79	318

The attributes with the highest frequency in the double coded chains were "Discussion platform with user groups" (n=68) and "tool for tracking and analyzing progress" (n=63). "The discussion platform with user groups" was viewed as a social and interactive attribute, but also convenient in order to improve training results because of the communication between clients and coaches. "The tool for tracking and analyzing progress" was seen as a convenient feature for keeping track of one´s progress and communicating it with the potential coach. The attribute "shared stories, photos and videos" (n=43) was also seen both as a social but also convenient attribute for sharing the information among the users and also to coaches, so they can analyze their client´s efforts. "The tool for searching coaches and other users" (n=33) was also viewed as a social tool but also a convenient tool for hiring a coach. The attribute "coach´s profile with blog" (n=51) was related to finding the fitting coach but also to communicating about training related concepts with coaches and other users.

The distribution of consequences is presented below in table 9.

TABLE 9 Distribution of consequences within each theme

Consequence name	1	2	3	4	5	6	Σ
Accessibility is improved	1			9		2	12
Barrier to get coaching is lowered	1						1
Competing to make progress				1			1
Errors are communicated				1			1
Face-to-face meetings are facilitated		2		2		2	6
Information on coaching is shared and obtained	30	7		35		2	74
Information on the service conditions is communicated				1			1
Information on training and nutrition is shared and obtained	28	45	3	8		26	110
Locating coach on the map				1			1
Marketing is improved	7						7
Personal progress and goals are being followed and analyzed	16	3		7		23	49
Results are improved through adjustments in training	8	8	1	1		18	36
Scalability of offered coaching service is improved	5					4	9
Service can be customized						1	1
The coaching services are paid				1			1
The quality of coaching is assessed				1			1
Total	96	65	4	68	0	78	311

The most frequent consequences in the double coded chains were the consequences "Information on training and nutrition is shared and obtained" (n=110) and "Information on coaching is shared and obtained" (n=74). These consequences were really frequent as they were related to various different features that would ultimately serve one´s progress in weight training or improve the social life and interaction bounded by training. The consequence "Personal progress and goals are being followed and analyzed" (n = 49) frequently succeeded the consequence "information on training and nutrition is shared and obtained". The consequence "results are improved through adjustments in training" was also frequent and also tightly related to the previously mentioned two consequences.

The distribution of values within each theme is presented below in table 8.

TABLE 10 Distribution of values within each theme

Value name	1	2	3	4	5	6	Σ
Aesthetics		2		3		1	6
Convenience	13	9		19		14	55
Cost-efficiency	3					3	6
Delivering value						2	2
Fun		3		4			7
Happiness		2					2
Monetary value	8					1	9
Personal progress / health	26	27	1	7		24	85
Quality	7			13			20
Sociability	21	14	1	9		13	58
Time-efficiency	2	3		4			9
Trust and safety	6	2	2	6		3	19
Uniqueness	1						1
Total	87	62	4	65	0	61	279

As one can see from table 10 some values were more important to the partici-
pants than others. The most popular theme in terms of value chain frequency
was the theme called "Me as the user of GetTrained" with 87 chains with a value.
The themes "The social side of GetTrained" (n = 62), "The use and service expe-
rience of GetTrained" (n = 65) and "Goals through the use of GetTrained" (n=61)
were popular as well in terms of the value chain frequency. The least popular
themes were the themes "The use contexts of GetTrained" (n = 4) and "Having
an impact on GetTrained" with the latter one being selected by none of the par-
ticipants.

When exploring the individual values the value with the highest frequen-
cy was the value Personal progress and health (n = 85), which seems logical
given the scope of the case application. The second most popular value was so-
ciability (n = 58). The third most popular value was convenience (n = 55) which
was interpreted as the higher level value for wordings such as easiness, avoid-
ing frustration, comfort and motivation.

5.2 Theme maps

There were two distinctive base roles for the participants to select, the client and
the coach. Before starting the interview the participant was asked to assume the
role he would fit the best as the potential user of the case application. 18 of the
participants assumed the client role whereas two of the participants assumed
the role of the coach.

5.2.1 Me as the user of GetTrained

The first theme handled the role of the user in the use of the case service.

Attributes: Different discussion tools were mentioned ranging from chat to discussion forum to a coach blog with commenting features. In coaching relationship context the discussion platform was also linked to a tool of tracking and analyzing the progress of the client, which would serve not only as a log for the training session but also as an analysis tool for the client and the coach. Tools for sharing information were shared programs for training and nutrition and a tool for sharing stories, photos and videos. The latter one was viewed as a tool that would serve in broader social media sense but also in the client-coach relationship scope. The customer relationship page was seen as a higher level feature for discussing details of the coaching and the personal progress of the client. A tool for finding a coach suiting one´s profile was seen as an important feature as well. All in all many of the features would serve not only the training and the coaching but the phase before that which would be finding a proper coach. The multi platform user interface was also mentioned as an attribute.

Consequences: For the clients an important consequence was sharing and obtaining information on training and nutrition. Attributes leading to this consequence were various: discussion platform with user groups; customer relationship page; coach profile with blog; shared stories, photos, and videos and shared programs for training and nutrition. This consequence was not met solely through a particular client-coach relationship but also through free information such as shared programs and being able to discuss with other users. A consequence related to the previously mentioned consequence of sharing and obtaining information on training and nutrition was the consequence of following and analyzing personal progress and goals. This consequence was also tightly coupled with the feature called tool for tracking and analyzing progress. It also led to improving the results through adjustments in training. These adjustments would often be realized through the interventions of the coach or the user themselves should they be using the tool for tracking and analyzing the progress without a coach.

Another important consequence was sharing and obtaining information on coaching. This can be seen as a preliminary consequence in the use of the service for the clients who actually want to hire a coach. All the features related to discussion were also linked to this consequence which would mean that the users would share information on the coaching with one another without necessarily interacting with the coaches themselves.

There were also consequences related solely to the answers of the coaches. One was the improved scalability of the offered coaching which was derived from the attribute of coach´s blog. Another one was the barrier of getting coaching being lower, which derived from the coach blog and discussion platform. This consequence also led to the consequence of improved marketing.

Multi-platform user interface was seen as an attribute improving accessibility, as the users would use the service both on their phones at the gym but also potentially running a deeper analysis on their training on a desktop computer at home.

Values: The values for the participants were personal progress and health, convenience (easiness, avoiding frustration, comfort), cost-efficiency, quality, sociability, trust and safety, uniqueness and monetary value. Quality was related to the quality of the service offered, but also to the perceived quality of one´s training. Monetary value was defined as monetary gains mentioned by the coaches whereas cost-efficiency had more of a saving money type of connotation in general. Uniqueness was also mentioned as a value, linked to the marketing benefits of the coach. All in all the clients had a clear focus in the personal development and health, whereas the coaches focused on the goals of distributing their service and the values serving those goals. The theme map for the theme "Me as the user of GetTrained" is presented below in figure 4.
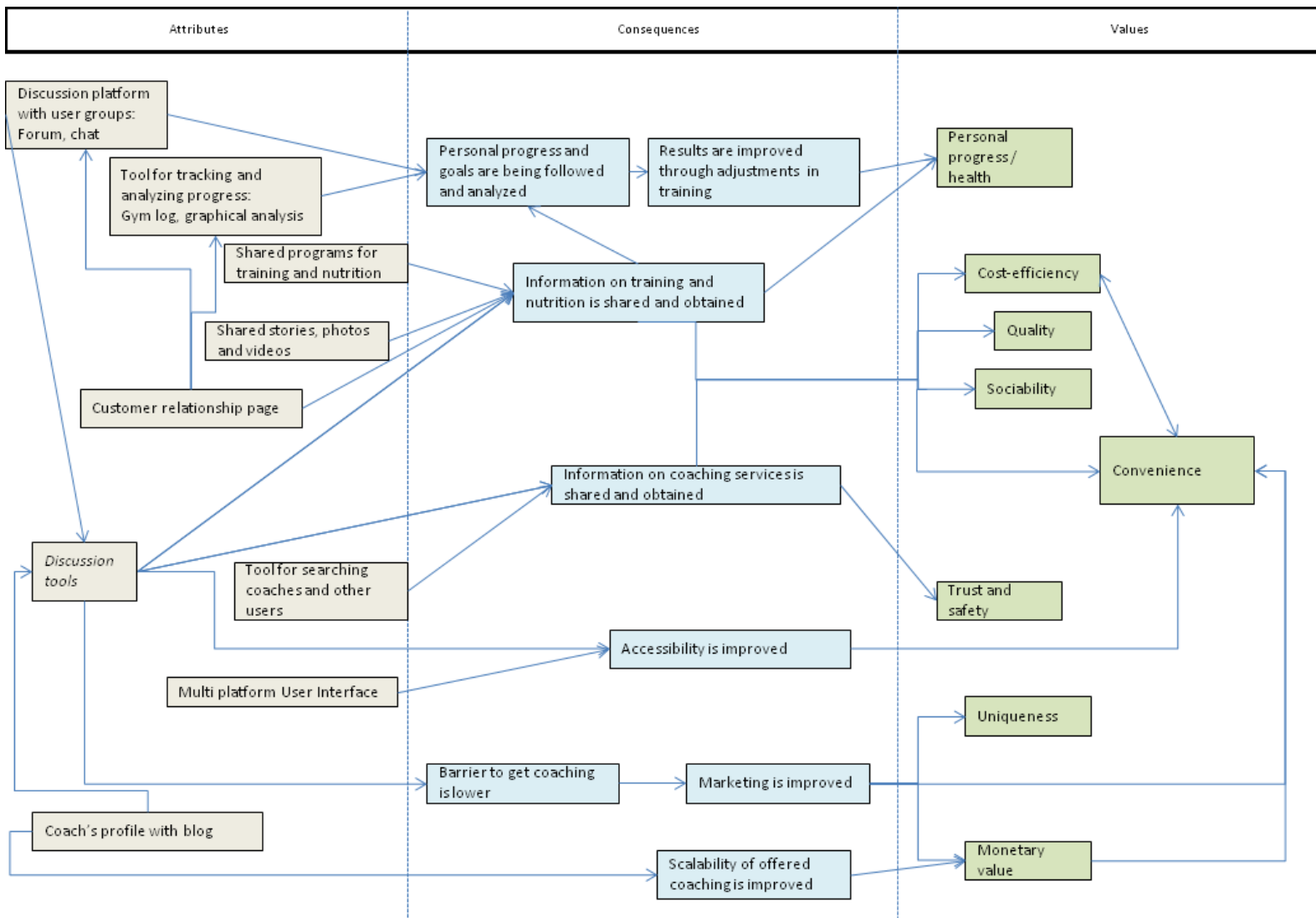
FIGURE 4 Theme map "Me as the user of GetTrained"

5.2.2 The social side of GetTrained

The second theme handled the social side in the use of the case service. Much like in the first theme map, the answers revolved around personal progress and goals. However the approach was more social among the participants

Attributes: Many of the attributes in this theme were mentioned previously: Discussion platform with user groups; tool for tracking and analyzing progress; shared programs for training and nutrition; shared stories, photos and videos; Tool for searching coaches and other users and coach profile with blog. As new attributes calendar, group coaching and gamification were mentioned.

Consequences: Much like in the first theme, the consequences revolved around obtaining and sharing information about training, analyzing personal progress and goals, and making adjustments based on the information and analysis on one´s training. These consequences were derived from various features. However instead of solely following the path of personal progress there seems to have been a stronger social connotation for these main consequences as they were also accessed through the calendar and group coaching features.

Values: Much like in the theme 1, the personal progress and health was an important value for the participants. Happiness emerged as a new higher level value linked to health and sociability. Trust and safety, fun, aesthetics, time-efficiency and convenience were also present. The theme map for the theme "Social side of GetTrained" is presented below in figure 5.
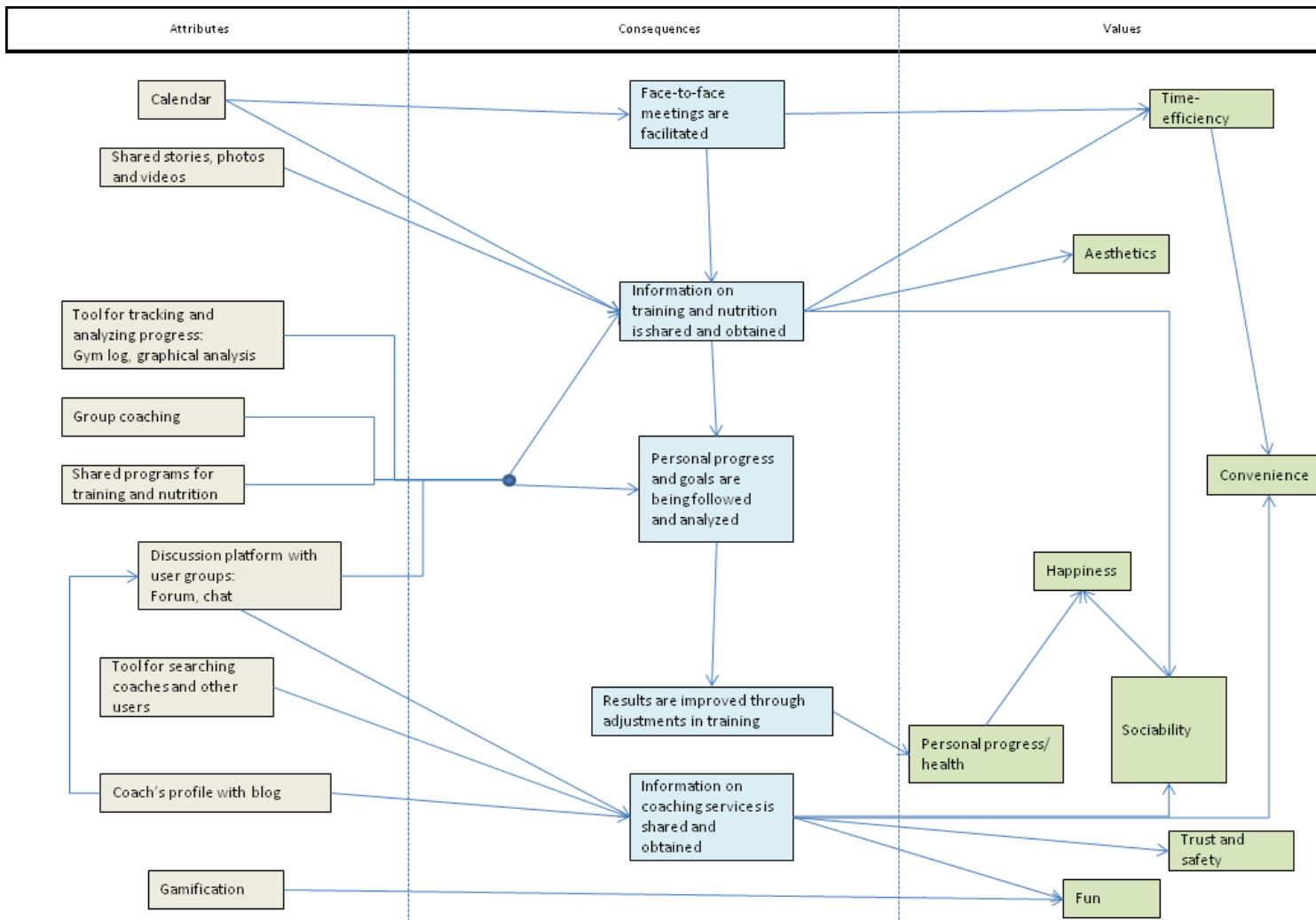
FIGURE 5 Theme map "Social side of GetTrained"

5.2.3 The use contexts of GetTrained

This theme was selected by one of the participants. It handled all the different contexts of using of the case service.

Attributes: The attributes mentioned in this theme were the discussion platform with user groups; shared programs for training and nutrition and shared stories, photos and videos. No new attributes compared to the previous themes emerged.

Consequences: The attributes discussion platform with user groups and shared programs for training and nutrition lead to information on training and nutrition being obtained and shared. The attribute shared stories, photos and videos served as the material received from the coach so that the client can improve their training through the necessary adjustments.

Values: The values mentioned in this theme were personal progress and health; sociability, and trust and safety.

The theme map for the theme use contexts of GetTrained is shown below in figure 6.

Attributes	Consequences	Values

Discussion platform
with user groups:
Forum, chat

Shared programs for
training and nutrition

Information on
training and nutrition
is shared

Personal progress
/ health

Sociability

Shared stories, photos
and videos

Results are improved through
adjustments in training

Trust and
safety
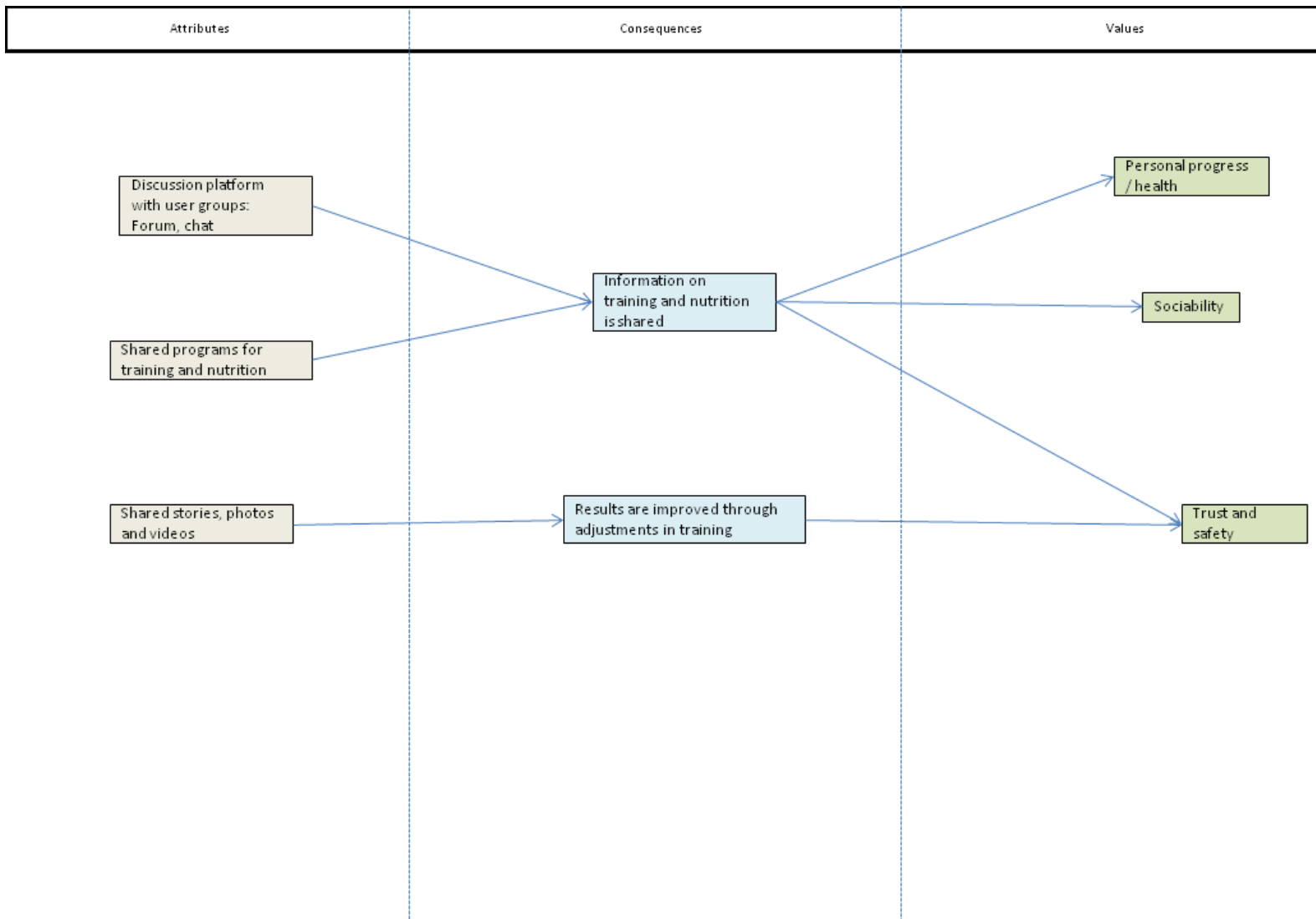
FIGURE 6 Theme map " The use contexts of GetTrained"

5.2.4 The use and service experience of GetTrained

This theme handled all the experiential sides of the use of the case application. In relation to the previously presented theme maps more quality related themes emerged in this theme

Attributes: In this theme the core attributes presented in the earlier themes were also present: Customer relationship page; tool for searching coaches and other users; coach´s profile with a blog; discussion platform with user groups; shared programs for training and nutrition; tools for tracking and analyzing progress and multi-platform user interface. The new attributes that emerged were error reports to help the developers and the responsibility page to communicate clearly on the responsibilities of each party related to the service.

Consequences: In this theme the previously mentioned consequences on sharing and obtaining information on training and nutrition, with the consequences of following and analyzing personal progress and making adjustments to training to have better results were present. Likewise the consequences on sharing and obtaining information on coaching were mentioned. A new consequence succeeding the consequence of following and analyzing one´s personal progress was the consequence of competing with the other users in order to make progress. Also a new consequence of succeeding the consequence of the results being improved through adjustments in training was the consequence of assessing the quality of the coaching, which seems logical when intending to ponder the holistic service experience from the client´s point of view. A new consequence related to consequence of the face-to-face meetings being facilitated was the consequence of being able to locate the coach on a map.

Values: Much like in the themes presented previously many of the same values were mentioned in this theme, the values being personal progress and health; convenience; time-efficiency; monetary value; fun; sociability; trust and safety; aesthetics and time-efficiency. Convenience was related to the majority of consequences. Time-efficiency was linked to organizing face-to-face sessions with the coach and find a proper coach. Aesthetics was linked to the attribute of multi-platform user interface and being able to locate the coach in the map. As before the value of personal progress and health was linked to the adjustments in order improve one´s training. Sociability was linked to sharing and obtaining information on coaching and competing. Fun was related to obtaining and sharing information on coaching, as it was related to sharing and obtaining information on training and nutrition. Quality was linked to improving one´s results training-wise. It was also linked to the quality of the coaching and the quality of the case service through improved accessibility of the multi-platform user interface. Trust and safety was also mentioned as a value related to the responsibil-

ity page, so that in the case of an injury for example it would be clear as to who would be held responsible.

The theme map for the theme use and service experience of GetTrained is presented below in figure 7.

| Attributes | Consequences | Values |

Attributes:
- Customer relationship page
- Tool for searching coaches and other users
- Coach's profile with blog
- Discussion platform with user groups: Forum, chat
- Shared programs for training and nutrition
- Tool for tracking and analyzing progress: Gym log, graphical analysis
- Multi platform user interface
- Error reports
- Responsibility page

Consequences:
- The coaching services are paid
- Locating coach in the map
- Face-to-face meetings are facilitated
- Information on coaching services is shared and obtained
- Information on training and nutrition is shared
- Personal progress and goals are being followed and analyzed
- Competing to make progress
- Results are improved through adjustments in training
- The quality of coaching is assessed
- Accessibility is improved
- Information on the service conditions is communicated

Values:
- Aesthetics
- Time-efficiency
- Monetary value
- Fun
- Convenience
- Sociability
- Personal progress/ health
- Quality
- Trust and safety

FIGURE 7 Theme map "The use and service experience of GetTrained"

5.2.5 Goals through the use of GetTrained

This theme handled all the goals that the user could achieve using the case service.

Attributes: The majority of the attributes related to this theme are mentioned previously: calendar, customer relationship page, discussion platform with user groups, shared programs for training and nutrition, tool for searching coaches and other users, tool for tracking and analyzing progress and the tool for sharing photos, videos and stories. The online course platform emerged as a new attribute, which brought up an interesting idea of enabling the coaches to provide offline courses, which would be done once and would require little maintenance afterwards.

Consequences: As in the previous themes the coach search tool led to the consequence of sharing and obtaining information on coaching. The consequences of sharing and obtaining information on training; following and analyzing once personal progress and improving the training results through adjustments in training were also linked to a series of attributes such as the tool for tracking and analyzing progress; discussion platform with user groups; shared programs for training and nutrition and finding users. The online course platform was proposed by one of the coach participants in order to improve the scalability and accessibility of the coaching services offered. The consequence of facilitating the face-to-face meetings with the coach through the use of the calendar was also mentioned. The consequence of customizing the service was mentioned by a coach participant as a part of the consequences of sharing information, analyzing the progress of the client and improving their results.

Values: Much like in the previous themes the general convenience was an important value when talking about the goals of coaching and training. Sociability was seen as a value linked to sharing and obtaining information on training with the coaches and other users. Trust and safety was linked to the information obtained and shared related to both training and coaching services. Monetary value and cost-efficiency were seen as important values related to the online course platform and the improved accessibility to coaching services, as the costs for maintaining such service would be lower in the long haul due to the pre-prepared material and minimal maintenance after launching a course. Delivering value from the coach´s perspective was also seen as an important value when improving the quality of training and results of their clients. As in the previous themes the value of personal progress and health was linked to the consequences of personal progress and goals being followed and analyzed, as it was to improving one´s results through adjustments in training. Aesthetics was mentioned as a value for achieving better personal training results.

The theme map for the theme goals through the use of GetTrained is presented below in figure 8.
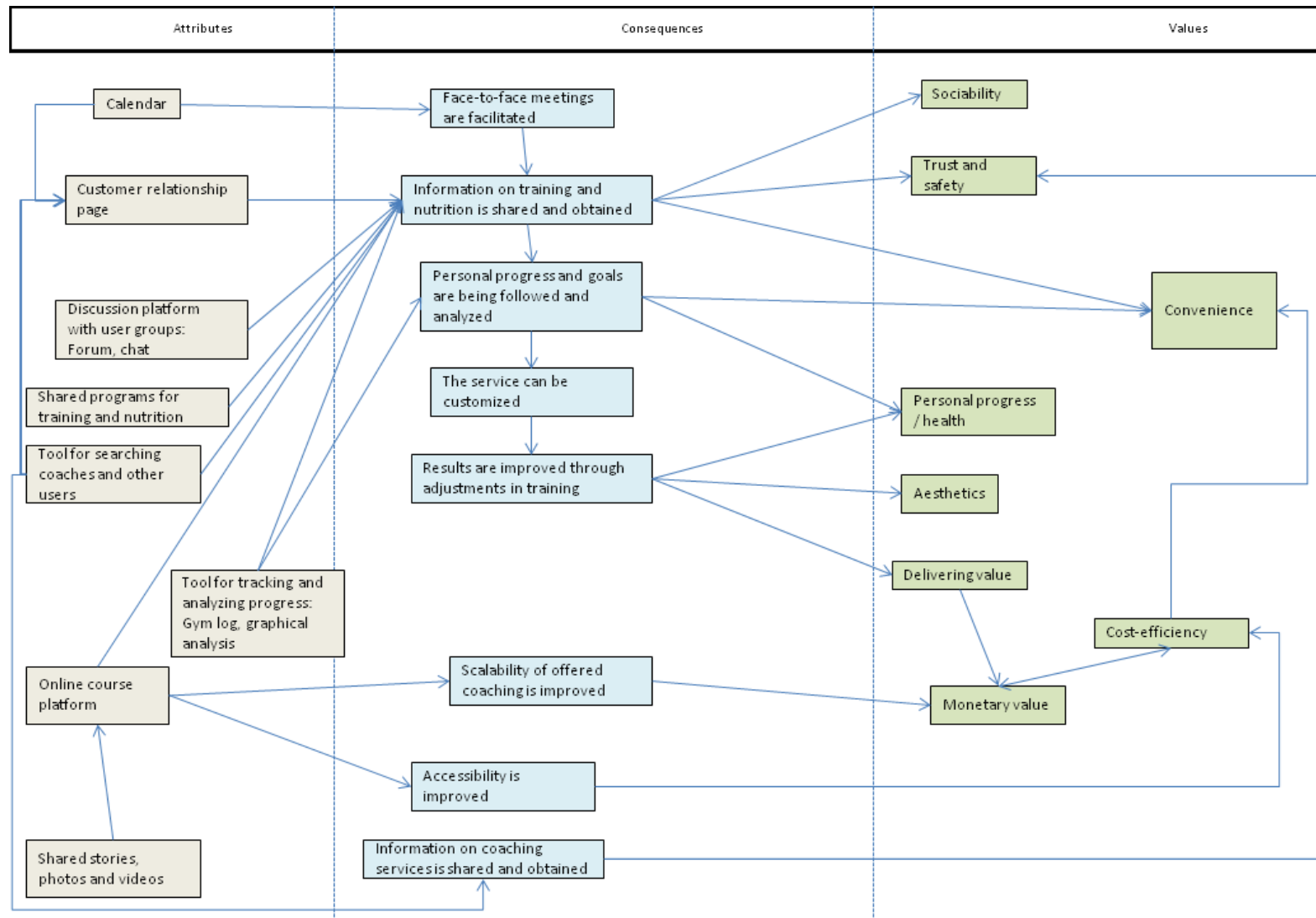
FIGURE 8 Theme map "Goals through the use of GetTrained"

6 Discussion

In this chapter the answers to the research questions are reflected. Also it is discussed, how the findings of the present thesis compare to the previous literature of value co-creation and the CIS model. Finally the implications to research and practice are presented.

6.1 Research questions

The goal for the study was to shed light on value co-creation in the use of digital services that support weight training and coaching related to weight training. The main research question was:

What is value co-creation and how does it manifest itself in the use of consumer information systems supporting weight training and coaching related to weight training?

An interpretive case study with interviews was conducted to answer the research questions. A concept of a digital service uniting the people practicing weight training (clients) and people offering coaching (coaches) was selected as the target of the case study. The case study was supported with a literature review on the concept of value, service-dominant logic, value co-creation and digital services. It was observed that the service-dominant logic oriented view on value creation emphasizing the value-in-use differs greatly from that of the goods-dominant logic where the value-in-exchange is highlighted. The concept of value-in-use was very present among the case study participants who assumed the client role, as they realized and perceived the value on a personal level (Vargo & Lusch, 2004; Sandström et al., 2008; Michel, Brown & Gallan, 2008).

To answer the main research question regarding the digital services supporting weight training and coaching within it, a sub research question was included:

What are the value propositions and the value drivers in consumer information systems that support weight training and coaching in weight training?

The CIS framework by Tuunanen et al. (2010) was used to explore value co-creation in the use of digital services supporting weight training and coaching related to weight training. The main findings are described in the table below (table 11).

TABLE 11 Main findings

Theme ID	CIS elements	Main findings
1	Construction of identities	As a client: Expressing their own role as a person doing weight training by analyzing own goals and progress and improving the results, while reflecting one´s own role through others by discussing training and sharing information. As a coach: Communicating one´s role as a coach to the potential clients through discussion tools aiming at lowering the barrier of buying their service and improving their marketing.
2	Social nature of use	As a client: Improving the practical relationship with the coach time and cost efficiently, to support their training. Finding a coach suiting their profile and forming a meaningful social relationship with the coach. Socializing with other peers who do weight training through discussion and group coaching for social value itself and to support their personal progress. As a coach: Discussing training with the clients. Gamifying the training to not punish the clients but to motivate them in a fun way giving them points for their effort. Sharing information on training through photos and videos to ensure the right technique cost-efficiently.
3	Context of use	As a client: Social contexts to improve training and social life: Discussion tools and tool for sharing their own stories, photos and videos. Offline example programs to improve their training.
4	Service process experience	As a client: The social experience. Experience of the quality of the coaching. Experience of the quality of the user interface. Experience of their own individual work with training by being able to save, follow and analyze information in order to improve training results and personal health
5	Participation in service production	-
6	Goals and outcomes	As a client: Finding the right coach. Facilitating operations with the coach from organizing face-to-face sessions to following their progress together. Following their own progress, making adjustments and improving their results to become healthier. Discussing training with other users and coaches for its social value. Getting information on training cost efficiently. As a coach: Delivering value to their clients through helping them follow and analyzing their training and improving the results. Providing training material cost-efficiently through online courses in order to lower the barrier to buy coaching and improving the accessibility. Having good communication tools with each client to improve their results, customizing the service and to form trust. Getting paid of their work.
7	Additional theme	-

Most of the components described in the CIS model (Tuunanen et al., 2010) were also present in the present study. The themes "construction of identities" (n=9), "social nature of use" (n=9), "service process experience (n=11) and "goals and outcomes" (n=10) were all popular themes among the participants. The least popular themes was the "context of use" (n=1). The theme "participation in service production" wasn´t selected by any of the participants.

The theme "construction of identities" among the client participants was seen as a theme for expressing one´s own role in the contexts of training, discussion and coaching. The information on training and nutrition with its social connotations would be reflected through their own role. For the coach participants this theme was seen as a theme reinforcing their own professional role as a coach through communication, striving to lower the barrier of buying the service and improving their marketing, which seems to have a strong link to the interaction side of value co-creation literature (Grönroos, 2008; Grönroos 2011; Gummesson, 2008) suggesting that the company is not restricted to the value proposition but it can also participate in the value fulfillment .

The theme "social nature of use" among the client participants was seen as a theme through which the participants express their social self in a coaching relationship and also when discussing with their peers. For one of the coach participants this themes was seen as a theme of expressing their social self in a coaching context, having the focus in the interaction with the client.

The theme "context of use" was reflected through social and individual use contexts of the service with the goal of improving their personal progress, trust and social life.

The theme "service process experience" was seen through social experiences, coaching service related experiences, user experience related to the information system platform itself and the experience of their own individual work in training.

The theme "goals and outcomes" had three central components among the client participants: finding the right coach, individual aspects and goals in training and socializing with other users and coaches. The goals of the coaches revolved around delivering value to their clients by analyzing and adjusting their clients´ training and nutrition habits providing while providing them with information cost efficiently. The coaches also saw good communication tools as important in order to improve their interaction and marketing to form trust. As business practitioners the coaches also had the goal of earning their income through their offered services.

Among the elements "construction of identities", "social nature of use", "service process experience" and "goals and outcome" many of the features mentioned were shared. Features mentioned in all of these themes were "tools of tracking and analyzing personal progress", "discussion platform", "tool for finding coaches and other users" and "shared stories, photos and videos". This

is indicative of core features that the users see necessary regardless of the theme-related angle they might have while discussing the service.

However there were some features that seem more related to a particular theme than another. "Customer relationship page" was mentioned as a part of the theme "Social nature of use" and it is clearly a feature related to the interactive aspects of the service offering, where the consumption and production of the service are at least partly simultaneous processes as noted by Grönroos (2006). The calendar feature which would be used to schedule the training sessions and to organize meetings with the coach was also viewed as a social and interactive feature but also a feature related to personal goals and outcomes. A few practical features related to the service process experience such as error reporting and responsibility page to improve the general convenience were also mentioned.

Across the features many of the consequences were also shared. Many of the features served sharing information on training and nutrition, whether it be the feature of discussing with other users, the customer relationship page or shared programs for training and nutrition. Another consequence shared across different features was the consequence of sharing and obtaining information on coaching services through features such as discussion tools and the tool for searching coaches and other users.

The values that emerged most frequently among participants were personal progress and health; sociability and convenience. Personal progress and health was defined as a value that comprised of personal health but also the learning experiences leading to one´s progress as an individual. Sociability is comprised of the value derived from social interaction in the use of the case application. Convenience is comprised of general easiness, efficiency, comfort and avoiding frustrations. The gathered research data suggests that the in the context of using digital services supporting weight training the most important value drivers are both individual and social.

The concept of value-in-use where the client realizes and perceives value through the use of service was present among the participants (Vargo & Lusch, 2004; Sandström et al., 2008; Michel, Brown & Gallan, 2008). The participants assuming the client role (n=18) would contemplate all the features ranging from the ones used on a personal level (tool for tracking and analyze progress) to more interaction centered features (discussion tools) through the potential value-in-use.

When contemplating the correct choice of a coach, the cost efficiency emerged as a central value, which seems to support the notion of Grönroos (2011) on value-in-exchange being a function of value-in-use. Through the coaching experience the client would create value-in-use and based on that value-in-use they would continue or discontinue buying the coaching service. It is implied that the clients would evaluate the quality of the coaching interpreting the feedback given by other users on a particular coach, in other words interpreting the value-in-use of their peers.

The service could also bring interactive elements to traditionally individually used tools such as a tool for tracking and analyzing one´s personal progress. This would mean that the coach would have access to their clients´ training diaries and would also be able to comment on their sessions and other details that are being logged. The study suggests a need for social and interactive tools in the form of a discussion platform, that could be used in various contexts such as public discussion or discussion bounded by the clients of a particular coach. This is supported by the notion of previous literature noting that the service is created in a network of stakeholders (Gummesson, 2008). The experiential sides are such as the experience of flow (Pilke, 2004; Forlizzi & Battarbee, 2004; Agarwal & Karahanna, 2000; Ghani & Deshpande, 1994) are suggested to be important as well, since the participants emphasized that the features should outperform the old ways of doing things such as analyzing the personal progress.

Among the participants as a part of the consequence of improving their results through adjustments in training, safety emerged as a central value on various occasions. Therefore there seems to have been a strong understanding of the potential risks among the participants. This seems to be linked to the notion of value co-destruction (Plé & Cáceres, 2010; Grönroos & Voima, 2013) where the person can potentially be off worse than better. This notion could place more emphasis on the importance of improving the interaction between the coach and the client in order to minimize the physical risk. This in turn could potentially decrease the value of pre-produced online courses, which on a superficial level could generate more value for the coaches by automating their service offering (Williams, Chatterjee & Rossi, 2008), but could also cause negative effects since the coach couldn´t intervene in their client´s training nor supervise their client´s training in a convenient fashion.

6.2   Implications to research and practice

This study suggests that the service-dominant logic (Vargo & Lusch, 2004) along with the Nordic school of service logic (Grönroos, 2006) provide a sound basis for understanding value co-creation in the context digital services supporting weight training and coaching within weight training. The laddering interviews grouped with the CIS framework by Tuunanen et al. (2010) provide a deeper view in the system value propositions and customer value drivers in said context. The system value propositions facilitate the process of value co-creation for the people using digital services supporting weight training and coaching activities, as they function contemplating and reflecting their own roles, the social nature and different use contexts. The customer value drivers lead the actual co-creation of the value of an individual who strives to follow and improve their own progress on a psychophysical or a professional level experiencing the service in an individual, technical and a social contexts.

6.2.1 The central values in weight training related digital services revolve around both utilitarian and hedonic goals

The core values found in this study were both utilitarian and hedonic. As noted by Holbrook (1996) the extrinsic values describe the relationship between goals and outcomes, or more concretely the utilitarian goals of getting something accomplished. This is supported in the present study in various aspects. The values of personal progress and health can be linked to utilitarian goals when approaching training through quantifiable information in training, such as intensity, training volume or rest periods. Also from the coach´s perspective there are utilitarian goals on a professional level, when the coach strives to reach their clients through marketing and once having the client contracted, deliver them value in the form of a coaching service, which ultimately results in the coach getting paid.

   According to the service-dominant logic view the value is realized and perceived through the use of service (Vargo & Lusch, 2004; Sandström et al., 2008; Michel, Brown & Gallan, 2008), where the company provides resources for the customer who can make use of them (Grönroos 2006). These notions were supported in the study. The notion of value-in-use in the level of the ratio between the quality and cost (Sandström, Edvardsson, Kristensson & Magnusson, 2008) was present among the client participants and the coach participants. Both the clients and the coaches saw the individual coaching as the highest quality option, but they also noted that it would also be the most expensive option, as it requires direct interventions by the coach. The clients saw value in preconfigured training and nutrition programs that would be cost-effective yet they would give them motivation and pointers to get started in weight training. From the coach´s perspective the pre-produced offline courses were mentioned as an option of offering coaching services in a cost-effective fashion, which is supported by the notion of fully automating and scaling the service offering as described by (Williams, Chatterjee & Rossi, 2008). However this poses risks in this particular context, as the coach cannot make interventions when automating their service, which in turn could lead to injuries or at least misapplied concepts among the clients. This in turn could lead to negative results or value co-destruction as described by Plé & Cáceres (2010) and Grönroos and Voima (2013). When applied to its extreme a fully automated course would be completely isolated from the customer (Vargo & Lusch, 2008b; Vargo, Maglio & Akaka, 2008), which would make the service resemble the older goods dominant logic perspective.

   As noted by Grönroos (2006) the company should support the customers in a value creating way which would result in the clients being better off than they were previously when using the services of the alternative company. In the feature of following and tracking the individual progress in the case service this concept applies as well, when considering the pen and paper approach or another gym log tool as the alternative. To motivate the switch to a new technology the user needs to gain something they didn´t gain before. In this particular

case the improvement could happen in the flow experience (Csikszentmihaly, 1991; Westbrook & Oliver, 1991; Agarwal & Karahanna, 2000) when logging the training sessions or the interactive elements, which enable sharing and commenting the training session data with the coach. As noted by Spohrer and Maglio (2008) the notion of paying for performance of the service is in line with the results as the training performance of an individual would be improved through communication between the coach and the client.

The coach participants saw more value on a monetary level, which implies some importance of the concept of value-in-exchange. As Grönroos (2011) pointed out, the value in exchange can be seen as a function of value-in-use. In a coaching relationship the clients ultimately define the value of the contracted coaching, and through communication tools provided by the service platform this perception of value can be communicated. In this way the transparency of the service quality could be maintained, which emphasizes the importance of a good review system of the coaches.

The tangibility and intangibility of resources as described by Vargo and Lusch (2004) and the categorization of the resources to operant and operand resources can be applied to the results as well. The skills of the coach can be viewed as operant resources and the physical equipment used in a live coaching context as operand resources. (Vargo & Lusch, 2004; Vargo & Lusch, 2008a, 2008b; Vargo, Maglio & Akaka, 2008). In the service platform level, especially considering the potentially high traffic and server load caused by the users with all the media shared, the server capacity and other technical resources could be seen as tangible resources, even if the digital services are typically seen as intangible. If we were to assume the angle of goods dominant logic from the platform perspective both the coaches and the clients could be seen as the users and value destroyers of the service, as they consume the technical resources. However a more fruitful angle could be argued to be the service-dominant value co-creation angle: The value is co-created in the platform between the customers and between the company offering the platform and the customers acting in it, but the value itself would be determined by the customers (Vargo, Maglio & Akaka, 2008), namely clients and coaches.

Personal progress and health can also be seen strongly linked to the value of sociability, as training at the gym can be a social event, which in turn can be viewed as a hedonic value. Even if the training did happen in a context were other people weren´t present, the coach could have provided the client with information on how to conduct that particular training session. This exchange of information between the client and the coach in spite of its utilitarian and quantifiable characteristics would also have social relevance both for the client and for the coach. Personal progress and health can also be seen as hedonic values on a personal level as well, as the improved physique could serve one´s body image on an aesthetic level. This is supported by the previous studies acknowledging the hedonic value created by the users (Tuunanen *et al.*, 2010; Agarwal & Karahanna, 2000; Holbrook 1996, Shiv & Fedorikhin, 1999; Hassenzahl & Tractinsky, 2006).

As described by Vartiainen and Tuunanen (2013) in their study of value co-creation in Geocaching, physical and mental welfare was linked both to social intercourse and personal goals, which is in line with this study. However it could be argued that due to the more discovery-oriented nature of Geocaching the values related in that context are more hedonic than in the case of weight training which in its extreme can be seen more utilitarian because of its quantifiable, measurable and in its extreme, highly competitive nature. The balance between the utilitarian and hedonic goals is also shown in the study of Tuunanen et al. (2006), according to which there are hedonic elements as value drivers, but also clear utilitarian values such as monetary value. The monetary value was also present among the coaches in this study. However the representation of coaches in the data set was very limited (n = 2).

Across the five different themes chosen among the client participants, personal progress and health played a major role as the core value. It seems that the higher level view of serving the well-being of the individual in the use of the case service draws a strong link to ultimately serving one´s personal progress through various different features, which is supported by the previous literature of intrinsic value (Holbrook, 1996), in this case the intrinsic value of being healthy, or rather, the health for the sake of itself as value.

6.2.2 Sociability is important both on a personal and professional level

As suggested by Grönroos (2008, 2011) through interaction the company is not only limited to proposing value but also being able to participate in the value fulfillment. This was supported by this study through the emergence of different social constructs in the responses of the participants. Among all the participants, clients and coaches, the social aspects were mentioned as one of the key elements for finding the motivation to use the case service. For example the tool for tracking and analyzing the training sessions was seen as a feature that would benefit from social aspects, such as sharing one´s training session data with the coach or other users and provide them with the possibility to comment on the training sessions and motivate one another. These social and interactive characteristics also support the notion of the consumption and production being at least partly simultaneous processes (Grönroos, 2006). These social aspects are also supported by the notion of Gummesson (2008) according to which the service is not created only by the provider and the customer, but it´s rather created in a network of activities that involve a group of stakeholders.

The clients viewed sociability important in itself implying an intrinsic value (Holbrook, 1996) but also as something that would support their personal goals in training implying an extrinsic value (Holbrook, 1996) of getting things done, through sharing and obtaining ideas on training and nutrition with other clients and coaches. The coaches also viewed sociability as an important component in providing the coaching services on practical, monetary and social levels. In addition to the monetary value gained from communicating about

their services, the coaches saw social value in sharing their information to people.

The notion of construction of identities presented by Tuunanen et al. (2010) in terms of the different roles of the individual was strongly present in the results. Even if the preliminary role of the participant was a client, the users can be interpreted to have other roles in the use of the service as well. When the client interacts with their coach, their role would be more receptive that in the case of interacting with other clients with less experience, in which case the user may give out information to the other person and therefore assume a more coach-like role. These observations are supported by the work of Lamb and Kling (2003) who state that people who using ICT applications utilize multiple applications, in various roles, producing goods and services while interacting with a variety of other people, and often in multiple social contexts.

6.2.3 The weight training industry would benefit from a platform merging individual and social activities related to weight training and coaching within weight training

This study contributes to recognizing the important values related in digital services supporting weight training and coaching within weight training. If a service similar to the case service were to be developed there would be various benefits for both individual people training as well coaches offering their services.

A service combining the tools for different objectives related to weight training and coaching within it would greatly reduce the need for many dispersed tools and could centralize the user actions in order to help them reach their goals conveniently. Some central operations would be the following: logging, following and analyzing one´s personal progress; enabling coaching related activities from sharing knowledge between the coach and the client to paying; enabling communication between the users with social media like characteristics like sharing photos, videos and stories and discussing different aspects of training. This type of service would be practical from the standpoint of enabling the people to network across different levels of expertise and interests related to weight training.

The study could help weight training coaches to improve their marketing in order to reach their clients better. Even if such digital platform was never concretely implemented, the core ideas on how the clients perceive the coaching is valuable in itself and could be used in a more minimal digital application such as simply amplifying a gym log program with the possibility of having other users comment their training sessions.

To implement such service it would be important to participate people with different levels of expertise, principally emphasizing the lead users as suggested by Von Hippel et al. (1986, 2001, 2002). In practice this could mean including both coaches but also weight training enthusiasts that have already bought coaching previously.

If the coaches had an effective way of communicating and collaborating with each other through the case service, there could be a possibility for a strong learning experience bounded to a social context that could also serve the coaches as business practitioners. This could be amplified to a broader network of professionals such as the academics working on health and nutrition, gyms and sport competition organizers to mention a few.

7 CONCLUSION

Here the conclusions of the present thesis are presented. First the research is summarized. Then the limitations are presented. Finally topics for future research are provided.

7.1 Research Summary

The goal for this study was to explore value co-creation in consumer information systems (CIS) supporting weight training and coaching within weight training through a literature review and the use empirical methods such as laddering interviews and clustering analysis. The theoretical background for the study lies in the service-dominant logic literature such as the work of Vargo and Lusch (2004, 2008a, 2008b) and the Nordic service logic literature by Grönroos (2006, 2008, 2011, 2010) complemented with the value co-creation oriented literature (Prahalad, & Ramaswamy, 2004; Spohrer & Maglio, 2008; Vargo, Maglio & Akaka, 2008), user experience related literature (Forlizzi & Battarbee, 2004; Hassenzahl & Tractinsky, 2006; Sandström, Edvardsson, Kristensson & Magnusson, 2008) and literature on digital services (Williams, Chatterjee, & Rossi, 2008; Mathiassen & Sorensen, 2008). The theoretical background guiding the empirical process and the theoretical side of value co-creation in consumer information systems was the framework of Tuunanen et al. (2010). The case service was a yet-to-be-developed digital service named GetTrained, which was loosely defined as a service connecting the people who practice weight training and people who offer coaching services for weight training. This relatively loose definition along with the provisional stimuli themes emerging from the study of Tuunanen et al. (2010) helped to set the basis for the service concept, without defining it too strictly, which in turn offered an opportunity to extract features not seen in advance. Consequently in addition to serving as the empirical data for the master´s thesis, the interviews could work as provisional concept definition aid if there was a concrete objective to develop such service.

According to the CIS framework by Tuunanen et al. (2010) the consumer information systems are such that they enable consumer value co-creation through the development of information technology enabled processes that integrate system value propositions with customer value drivers which comprises both wider service nature as the information technology. Tuunanen et al. (2010) state that both rational (utilitarian) and emotional-based (hedonic) assessments are made to motivate the consumption decisions. In this study it was also observed that different attributes (features) and consequences served both utilitarian and hedonic values.

An interpretive case study was conducted by using laddering interviews (Kelly, 1955) to support the analysis emerging from the critical success factors (CSC) as described by Peffers et al. (2003). Following the critical success factors methodology a clustering analysis was conducted in order to help answer the research questions. 20 people were interviewed. 18 of the participants assumed the role of a client while 2 of the participants assumed the role a coach in weight training related coaching services.

The most frequently mentioned values in the empirical data were personal progress and health; convenience and sociability. Personal progress and health were linked to the learning experience and development of one´s own body and mind. Convenience was a higher level value consisting of general easiness, comfort, retaining motivation and avoiding frustration, and it was strongly linked to the experiential sides of using the service in order to achieve a generally convenient user experience. Sociability was a value defined to describe the social and interaction related elements which were present in many features and their related consequences.

7.2   Contributions to the research and practice

There are some contributions to research and practice in this thesis. This thesis aimed to broaden the understanding of value co-creation in digital services that support weight training and coaching within weight training. To answer the higher level question on the nature of value co-creation and how it manifests itself in the world of digital service supporting weight training and coaching of weight training the study had its theoretical base in the previous service-dominant logic and Nordic school of service logic literature which aims to explain and motivate the shift from goods dominant logic to service dominant logic and the benefits this shift offers in terms of value creation.

The second research question regarding the system value propositions and customer value drivers in digital services supporting weight training and coaching in weight training was approached through the consumer information systems model of value co-creation. The laddering interviews grouped with the interpretive clustering analysis were used to explore the particular features, consequences and values that would be important to the clients and coaches of such digital service system. The results showed that the CIS model can help

gather understanding the values related to hobbies and sports related to the wellbeing of an individual, and that below the individual surface there are many social meanings and values for people.

The study suggested that the central values in the use of digital services supporting weight training and coaching within weight training revolve around utilitarian and hedonic goals, which are complementary and parallel not exclusive. The study suggested that the principal values in the said context serve the health and personal progress of the individual along with the sociability and general convenience.

The study also suggested that social characteristics play an important role in the use of digital services that support weight training and coaching, both for the clients and for the coaches. It was suggested that sociability is a central value helping the interaction between the coaches and the clients. The interaction enables the coach to take part in the value fulfillment of the client. It was also suggested that sociability serves as both intrinsic value meaning that sociability is seen as a value in itself, and also as an extrinsic value, meaning that it serves as an intermediary and supportive value for people´s personal fitness goals. Different roles expressed in social contexts were also argued to impact the value co-creation process in a collaborative weight training setting, and the roles were argued not to be fixed but dynamic depending on the context people share their knowledge in.

On a practical level the study has some contributions well. The study suggested that there is a need for a service platform that would combine various features in the world of digital services supporting weigh training, such as keeping track of one´s personal progress, interacting with coaches and users, improving the marketing of coaches collaboratively and other concepts such as improving the motivation for training through gamification. This centralization of different tasks under on digital platform could improve the life of people training and coaching, as they wouldn´t need many different tools to get things done. The theme maps (figures 4-8) and their contextualized results (table 11) could also help coaches improve their marketing and networking strategies.

7.3   Research Limitations

In the process of carrying out this study quite a few limitations must be acknowledged. The sample for the research was only 20 interviews, which can be rightfully argued as a small sample. Also considering the largely subjective nature of value creation from the user´s perspective and how one perceives health and fitness subjectively is a limitation in itself. The interview sample also consisted mainly on clients (n=18) whereas only two coaches were interviewed. To get a broader sense on the required features from the coach´s perspective, more coaches would need to be interviewed. Also many of the participants happened to be working in the IT or service sector, which could possibly alter their roles as participants subconsciously, providing answers from a profes-

sional, rather than the client perspective. This on one hands showed that using the snowballing technique it would be reasonable to select the participants more levels away from the initial contacts.

The dualistic nature of handling the stimuli and interview material in Finnish and English also sets limitations for the study. As the majority of the material was gathered in Finnish there was a linguistic challenge in translating the transmitting the ideas to analyze them in English. This applied also to carrying out the interviews themselves as one of the interviews was done in English while using a stimuli list that was translated from Finnish to English.

One could also argue that to improve the cohesion of the research data, it would make sense to generate separate theme maps for coaches, as their goals and values as business practitioner differed greatly from the values of the client participants.

The wide provisional scope for the characteristics of the case service also set its limitations on the abstractions of attributes, consequences and values gathered from people, as defining a thorough concept for such system with all the possible characteristics would require modeling that is beyond the scope of a master´s thesis. Quite a few of the values could have been divided to more particular sub-values.

The theme maps may have been missing some critical information for a few reasons. Firstly a lot of the material was gathered in groups of attributes, consequences and values without separating them well in every occasion. This required revisiting the material through the records later on in order to understand where each thought started and other one ended. While better separation was reached, it might not have been perfect. This could have caused inconsistencies among the relations of the attributes, consequences and features. Also a less strict grouping of attributes, consequences and values could have helped the study, but could also have caused a data set far more complex that could not have been presented theme by theme.

It also has to be acknowledged due to the broad scope of the case service, that more information on the challenges of conceptualizing and developing such an all-encompassing service would be needed. The previous studies that could support such efforts could be found in the studies of digital services platforms. This would require a more in-depth analysis on the resourcing on both technical and human level.

Due to the interpretive and subjective nature of the analysis process carried out by only one person, the study can´t be categorized thoroughly exact scientifically. This subjectivity seems to have been present among the participants as well. While the participant relied on different themes ranging from individuality and sociability to many different other aspects, the core of their communication seems to have relied on personal goals, which on the other hand is very logical given the scope of the case service.

7.4   Future Research

The interpretive case study part of this thesis was conducted by making use the consumer information systems framework of value co-creation by Tuunanen et al. (2010), by applying it to a digital service context of weight training and coaching within weight training, and conducting 20 laddering interviews, in which the majority of the participants assumed the client role. However to get a broader and more accurate perspective on the values experienced by the coaches it would be beneficial to conduct a study where their perspective is more present. There is a possibility that in such research the utilitarian values would be more prevalent.

One central limitation to this study is that the interviews were conducted with individuals who practice weight training without classifying them based on their expertise in any way. In the future it would be beneficial to study further the different types of needs of the clients by classifying the them based on their expertise and training history. This would be necessary because of the dramatic differences among the training methods and sports making use of weight training, such as professional endurance sports as contracted with professional power lifting.

To get information on a more casual and general population level a separate study could be conducted with people with more sedentary lifestyles who may strive for a fitter physique and happier life while making use of coaching and digital service in order to reach their goals. It would be sensible to conduct such a horizontal study by incorporating more quantitative tools in order to analyze and draw conclusions of a broader population. This would require a more strict and balanced approach in terms of age, life situation and other demographic characteristics.

This study was conducted in a qualitative nature regardless of its few quantitative characteristics, and therefore more quantitative and measurable studies should be done. This in turn could help the academia and the business practitioners within information systems development to come up with solutions in a more formalized manner to understand the concept of value co-creation in digital services.

One field completely undiscovered in this study is the collaboration between the business practitioners. This would be an interesting field to study to understand the use of contemporary social media tools and digital services in the weight training industry. In this way we could get a better understanding on the business-to-business (B2B) side on how the businesses in the fitness sector collaborate and co-create value in the present day and how these operations could be improved.

The weight training and fitness the economy consists of more parties than just coaches and clients, as the gyms alone form their own eco-system, as do the companies selling supplements. In a strictly business-to-business context it would also be interesting to analyze how the marketing and sales strategies

could be improved throughout different stakeholders, and how the value co-creation principles would apply in such domain.

It would also be interesting to study further how gamification could serve coaching in weight lifting. For example in group coaching settings there would be quite a high potential value in offering the mediums for a playful competition among the people getting coached, so that they would score points for doing things right at their gym in a playful manner.

As the mobile payment methods are becoming increasingly popular in the present day, it would be meaningful to study the effects of incorporating these more convenient payment methods in the digital coaching context and how it could potentially lower the barrier for contracting a coach. This wouldn´t need to be restricted to weight training but could be studied in any setting were knowledge is sold between individuals.

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APPENDIX 1 - STIMULI THEMES

GetTrained is a service that combines the people searching coaching weight training, and the people offering the coaching. The user can search coaching with different filters, or ad a message for the required coaching. A coach can offer their services in the platform and specify all the different forms of their services (so that the clients can filter based on these). The platform functions also as a payment platform for the these services.

You can choose two most important of the topics 1-6. You can also pick your own topic (topic 7).

1. Me as the user of GetTrained. As a coach or client.

Your own role and the actions that deal with yourself, and the content you can share using the service. As an example: Writing comments, reviews of coaches, diaries etc. If you are a coach, this theme could deal with sharing your expertize, sharing information in the service and defining the services you offer.

2. The social side of GetTrained

This means communication with other users (coaches and clients). This could be for example about discussing with the coach, sharing training videos, long-term development tracing through discussions, or reviewin training methods through video call with the coach.

3. The use contexts of GetTrained

This means all the different environemnts, where you do something related to the service. For example using the mobile application in the gym, coaching events in the internet, live-coaching, or whichever environment that could deal with the use of GetTrained.

4. The use and service experience of GetTrained

This means all the different experiences related to the use of GetTrained, from the use of the application to the coaching event itself and paying the coach etc. As an example the usability of the mobile app, the accessibility, quality-related things of the service, presentation of the information (such as the offered services, merits and experience of the coach, pricing, coach comparisons, location of the physical services, video feature in the case of internet coaching, etc. When offering services this could for example deal with defining and grouping of the offered services.

5. Having an impact on GetTrained

This means all the actions, that could help other people to use the service. These actions could be for example creating reviews of the coaches for other users, or bug reports, or suggestions or whichever actions that could help to develop the service.

6. Goals through the use of GetTrained
This means all the personal goals and values that GetTrained could help achieve. As a client this could mean goals related to the coaching. In the case of coach this would mean the personal goals of the coach.

7. Some other theme: What else could be necessary in the use of GetTrained?