

Lean Service Innovation

Abstract

The purpose of this paper is to propose an approach for lean service innovation. The knowledge gap relates to three specific challenges of service innovation: early identification of the core customer value with business potential, in-depth understanding of customer value for new/potential customers, and discovering and utilizing latent customer needs. As a result, this article introduces a model of lean service innovation. The model focuses on the process rather than on single co-creation methods. The model shows how a new service can iteratively be developed through several improvement rounds into a final service, and each round increases the company's understanding of customer value and capability to better integrate resources for this. Both the theoretical domain and the application of service-dominant logic can be extended with the lean service innovation approach introduced here. It shows the process of in-depth learning with customers and the rapid prototyping of a service. It facilitates early identification of the core customer value with business potential in the innovation process, identification of customer value for new/potential customers, and discovery and utilization of latent customer needs in innovation. It illustrates repeated experimentation and improvement of service with customers and ultimately supports the implementation of service-dominant logic in innovation.

Keywords. service-dominant logic, lean innovation, lean enterprise, service innovation, agile business development, service design

Introduction

The ideas of iterative and experimental co-creation became increasingly popular in innovation management after the turn of the millennium, and these ideas began to be used under the terms “agile” and “lean”. The term “lean” originates from MIT’s study in 1985 that compared Japanese and Western mass production approaches among motor vehicle manufacturers (Salleh et al., 2012). Lean was defined by Womack et al. (1990) as a five-step process beginning with defining customer value, defining value stream, making it flow, pulling the customer back and striving for excellence. These ideas were widely adopted in agile software development in the beginning of 2000 (Schwaber and Beedle, 2001). Agile software development is based on an iterative and incremental process that continuously adapts and adjusts to the collective skills and experience of developers, changes in service/product requirements, and changes in the development and targeted operating environments. Frequent and face-to-face communication and feedback from users during the development process, simplicity, and ultimately solutions that satisfy customer needs are the cornerstones of agile software development (Turk et al., 2006). Somewhat later, the idea of iterative incremental business development with testing and experimentation with users and customers was adopted in the context of startups and SMEs. Blank (2006) introduced his Customer Development Model for startups, which is based on iterative and incremental product development and feedback from customers. This approach assumes that customers and the market are unpredictable, and product developers will blunder several times before finding the right solution. Going backwards in the innovation process is not considered a failure. Instead, developers spend a great deal of time in the field listening, discovering how customers operate and behave, what their key problems are, how the present version of the solution works, and how it affects customer satisfaction and sales. Much effort is devoted to

analyzing the “lessons learned” and “what didn’t work” (Blank, 2006). It should be noted that the ideas of lean innovation are discussed in the literature under various other terms and concepts, such as “agile development”, “lean development”, “lean enterprise”, “lean startup”, and “lean business development”.

The existing literature on Service-Dominant Logic (S-D logic) (Vargo and Lusch, 2004; Lusch and Vargo, 2014, 2008; Grönroos, 2006; Heinonen et al., 2010; Strandvik et al., 2012) does not utilize the ideas of lean innovation even though it has become one of the most popular paradigms of innovation and business development in recent years, particularly among startups and SMEs (Blank, 2006, 2013; Schipper and Swets, 2010; Ries, 2011; Maurya, 2012; Cooper and Vlaskovits, 2013; Ojasalo and Ojasalo, 2015d). S-D logic literature includes several inquiry methods and co-creative and participatory techniques such as the event-based narrative inquiry technique EBNIT (Helkkula, 2010; Helkkula and Pihström, 2010), the CSEP co-created service experience practices framework (McColl-Kennedy and Ferrier, 2015), the collective service experience co-creation method (Caru and Cova, 2015), and many others (see Edvardsson et al.’s 2012 review of methods in customer integration within service development). However, these single methods do not represent a holistic built-in lean approach even though many of them can be useful in the process. They are methods involving the customer *during* the service innovation process rather than approaches for managing the *whole process* of innovation.

The research has pointed out the lack of managerial approaches for applying S-D logic in practice. According to Vargo et al. (2007, p. 7),

“Paradoxically managers, though motivated to perform and aware of the links among service, competitive advantage, and firm performance, often fail to execute on that knowledge (cf. Bharadwaj et al., 1993). Additionally, academics, though aware of these links, have not sufficiently informed normative theory to adequately assist in

that execution. We submit the problem is that there is not a full and adequate understanding of the concept of “service” and its “role”.

In line with this, “Less is known about the organizational capabilities necessary to execute S-D logic in practice” (Karpen et al., 2012). Schäfer and Klammer (2015) raise the same question: “But how can companies fulfill the requirements of what is known as the Service-Dominant Logic (SDL) paradigm and put them into practice?” According to Vargo and Lusch (2016b, p. 15), “Dynamic strategy development and implementation” is one of the identified research frontiers considering S-D logic 2025. A recent example of lending theories from other disciplines to facilitate applying S-D logic in practice is Skålen and Edvardsson’s (2016) framework of the transformation from the goods-dominant to the service-dominant. Indeed, even though companies are interested in developing their business with the principles of S-D logic, they need pragmatic frameworks for that. There is a clear need to extend the S-D logic perspective with managerial research, offering approaches which help the implementation of the theory into practice, and as shown by Skålen and Edvardsson (2016), also borrow theories from other disciplines when useful.

Next, in addition to the underlying general knowledge gap of managerial approaches within S-D logic, we explain the specified *knowledge gap* addressed in this article, which is threefold. The ongoing research of innovation is driven by a need to develop more compelling value propositions (Vargo et al., 2015). The need for understanding innovation as a collaborative process occurring between actors is emphasized in S-D logic (Lusch and Nambisan, 2015). Co-creation of customer value, which is the central element of S-D logic (Vargo and Lusch, 2004) is not trivial however, and it requires more attention in the context of service innovation. We point out three specific knowledge gaps related to the following challenges in service innovation. The first knowledge gap relates to the challenge of early identification of the core customer value with the business potential in the service innovation process. Second, what creates value to existing customers may significantly differ from what creates value to new/potential customers. The second knowledge gap relates to an in-depth

understanding of the needs of new/potential customers in service innovation. The third knowledge gap relates to discovering and utilizing latent customer needs in service innovation. Currently, S-D logic includes little knowledge of managing these challenges systematically with a holistic innovation process. We believe that the lean innovation approach (Blank, 2006, 2013) combined with S-D logic can offer an effective way to address these challenges and related knowledge gaps. The theoretical development and further research as well as the application of S-D logic can gain from the ideas of lean innovation and particularly the above challenges of service innovation. Next, we briefly discuss the above challenges of service innovation and the related knowledge gaps.

Early identification of the core customer value with business potential. According to Gummesson (1978), there is no sense in solving the wrong problem in an excellent way. Traditionally, the process models of service innovation have consisted of a linear sequence of consecutive phases (Donnelly et al., 1985; Johnson et al., 1986; Bowers, 1989; Scheuing and Johnson, 1989; Grönroos, 1990; Edvardsson et al., 2000). Some process models of service innovation include iterative feedback loops or parallel processes (e.g. Alam and Perry, 2002). The traditional process models typically include business analysis at some point of the innovation process, but they do not emphasize the early stage and grass-root level testing of customer value and the business potential of the new service. Consequently, service innovators may end up developing a service for a non-existing need. Or they may develop a service that does solve a need, but customers are not willing to pay for it. According to Christensen et al. (2005, p. 76), innovation too often creates “products that do not help customers do the jobs they need to get done”; in other words, products that do not genuinely create value for customers. Finding the core customer value with business potential at the early stage of the innovation process is vital. If service innovators make a mistake in identifying the core customer value in the beginning, all subsequent efforts and investments in the innovation process are useless. An interview with Ries (2013, p. 13-14), an entrepreneur and author, illustrates this challenge.

“You need to have more than a good story or a few anecdotes, but evidence that customers find the product valuable . . . But [with unsuccessful innovation] we’ve missed one of the critical early hypotheses—that people find the product valuable at all, that they find the value proposition credible enough to give it a try. If they don’t, it doesn’t really matter what happens next [in the innovation process] . . . If our business model depends on people paying us money for something, we need to create as close a facsimile of that purchasing experience as we can, and we need to make sure that they will actually pay us money for it.”

The lean innovation process has its focus on both early identification of the core customer value and testing its business potential (Blank, 2006, 2013; Ries, 2011). We borrow these ideas of lean innovation for the service innovation process in order to fill the knowledge gap of early identification of the core customer value with business potential.

The latest service innovation research is evolving towards an iterative service innovation process based on incremental improvement cycles. Carlborg et al. (2014) conducted a literature review on the evolution of service innovation research, and they identified three phases: formation, maturity, and multidimensionality. They found that the latest evolutionary phase, the multidimensional phase, included the idea of a cyclical form of innovation in terms of integrating downstream activities into the innovation process. Lenfle and Midler (2009) empirically examined the innovation process of product-related service and found that that “simultaneity of the production and consumption of a service means that three types of learning – technical, sales and uses – take place at the same time” (p. 156). Similarly, Kindström and Kowalkowski (2009) developed a process framework for industrial service offerings, including the phases of market sensing, development, sales, and delivery. According to them (*ibid.*, 158-9):

“The framework is circular, which implies that companies must go through the stages continuously and not become complacent after completing one revolution. Furthermore, after each stage, companies should reflect upon the previous phases and review experience of the process (both success and failure) in order to learn how to improve NSD (Bessant and Davies, 2007).”

Moreover, Shang et al. (2009) empirically examined service innovation by paying attention to dynamic capability development. They proposed a model of the cyclical flow of dynamic capabilities. Their model is based on the recursive flow of (a) integration and coordination, (b) learning and experimentation, and (c) innovation and transformation. Indeed, service innovation research is moving towards cyclical and experimental innovation processes, but more theoretical and applied thinking is needed in this area. In addition, the customer involvement and related managerial approaches require more theoretical development.

Customer value for new/potential customers. This challenge has been recognized in the early market orientation literature. Christensen and Bower (1996) show that established companies tend to focus on the needs and customer value of an existing market and omit opportunities of value in emerging markets. Companies tend to focus on value expressed by the existing powerful customers, in particular. This may eventually lead to the “tyranny of the served market” (Hamel and Prahalad, 1991, p. 83) in which managers see the world only through their current customers’ eyes. This is manifested by adaptive learning (Senge, 1990; Berthon et al., 1999), also called single-loop learning (Argyris, 1977). It tends to result in incremental innovation which is within the limits of the traditional scope of the organization’s activities (Slater and Narver, 1995) as well as the core capabilities of the company turning into “core rigidities” (Leonard-Barton, 1992) that can inhibit innovation (Slater and Narver, 1998). In contrast, disruptive innovation, also called radical innovation, often requires considering the value for customers that do not exist yet. However, such innovation projects often lack initiative, willingness to take risk, and resources (Christensen and Bower, 1996). The existing

service literature includes plenty of knowledge about innovating new service, but very little knowledge about innovating for new/potential customers (Berry et al., 2008) or about customers who innovate (Michel et al., 2008). One of the central ideas of lean innovation (Blank, 2006, pp. 16-17) is “customer development,” which refers to innovating for new customers and creating a new market. It resembles the “blue ocean strategy” (Kim and Mauborgne, 2004). We believe that the ideas of lean innovation can help in filling the identified knowledge gap on innovating service to new/potential customers through in-depth understanding of customer needs with new/potential customers.

Discovering and utilizing latent needs. Receiving market information and using it in the business development is one of the cornerstones of customer orientation (Kohli and Jaworski, 1990; Narver and Slater, 1990; Shapiro, 1988; Deshpande et al., 1993). However, several studies suggest that market orientation does not ensure that a company knows well its customers’ needs; particularly latent and future-oriented needs often remain unrevealed (Slater and Narver, 1995, 1998; Christensen and Bower, 1996). Latent needs refer to what customers really value or the products and services they need but have never experienced or would never think to request (Senge, 1990). They may generate both fuzzy and implicit expectations (Ojasalo, 2001). Slater and Narver (1998) addressed various shortcomings of the early literature on market orientation and introduced two forms of market orientation: customer-led and market-oriented philosophy. The former is primarily concerned with satisfying customers’ expressed needs; it has short-term focus and is reactive. The latter goes beyond satisfying expressed needs, it aims at understanding and satisfying customers’ latent needs, it has a long-term focus, it is proactive, and it has the potential for disruptive innovation. According to Ordanini and Parasuraman (2011), without a proactive drive, market orientation at best facilitates preempting competitors in capturing an unmet service need that already exists (perhaps in latent form), but it does not facilitate causing something significantly new to happen.

Entrepreneurial companies are not restricted just by expressed needs and value of the existing “served market”; they address latent customer needs and the emerging unserved market (Christensen and

Bower, 1996; Slater and Narver, 1998). They work closely with lead users (Tabrizi and Walleigh, 1997) and the world's most sophisticated and demanding customers (Hamel and Prahalad, 1994) who have needs that are advanced compared to other market members and who expect to benefit significantly from a solution to those needs (von Hippel, 1986). They think that customers hire a product to get a job done for themselves, and every job people need or want have social, functional, and emotional dimension (Christensen et al., 2005). They use exploration and experimentation (Hamel and Prahalad, 1991; Quinn, 1985; Sykes and Block, 1985), probe and learn process (Lynn et al., 1996), they closely observe customers' use of products or services in normal routines (Leonard and Rayport, 1997), and they want to understand the job that the customer hires the product for instead of understanding a "typical customer" (Christensen et al., 2005, p. 78). Indeed, because discovering and understanding latent needs can be facilitated by repeating exploration and experimentation closely with customers, and because this is the main idea of lean innovation (Blank, 2006, 2013; Ries, 2011), the lean innovation approach has a clear potential to add to the knowledge of discovering and utilizing latent needs in service innovation.

We address the above threefold knowledge gap and argue that both the theoretical domain as well as the applicability of S-D logic can be extended with a new perspective that lends ideas from lean innovation. We focus on the holistic process rather than on individual co-creation methods. As a result, we introduce a model of lean service innovation.

This conceptual article is based on the literature on S-D logic and lean innovation. The rest of this article is organized as follows. First, it reviews the literature on S-D logic and lean innovation. Then, based on the literature, it proposes a model of lean service innovation. After that, it discusses contributions, brings forward opportunities for further research, and draws the final conclusions.

Service-Dominant Logic

Over the past ten years, academic discussion has shifted strongly away from goods-dominant logic (G-D logic) and the traditional thinking of the sequential value creation process to a new business logic — business logic for service — which emphasizes the customers' active role in value creation (e.g., Vargo and Lusch, 2004; Grönroos, 2006; Heinonen et al., 2010). The G-D logic assumes that people exchange for goods, value is determined by the producer and embedded in goods and defined in terms of exchange value, the customer is the recipient of goods, customers are acted on to create transactions with resources, and wealth consists of owning, controlling, and producing tangible resources (Vargo and Lusch, 2004). The concept of *service science* (Maglio and Spohrer, 2008, 2013) sees that economic entities are collections of resources, including people, technologies, organizations, and information (Spohrer, Maglio, Bailey, and Gruhl, 2007), and resources interact by granting access rights to one another's resources, forming networked service systems (Spohrer and Maglio, 2010; Maglio, Vargo, Caswell and Spohrer, 2009).

According to *Service-Dominant Logic* (Vargo and Lusch, 2004, 2008a; 2008b; 2016), there is no value until the offering is used and experienced by the customer. The concepts of value-in-use and value-in-context have replaced the traditional concept of value-in-exchange. Thus, value is always uniquely and phenomenologically determined by the beneficiary (i.e., the customer or user). In other words, value is idiosyncratic, experimental, contextual, and laden with meaning. S-D logic also sees that the company can offer value propositions and value is always co-created. Consequently, the customer is always a co-creator of value (Vargo and Lusch, 2004; 2008). The early ideas of value co-creation were introduced by Nornam and Ramirez (1993). Moreover, the terms operand and operant resources are used in S-D logic. Operand resources are those in which an operation or act is performed to produce an effect, while operant resources are resources that produce an effect (Constantin and Lusch, 1994). S-D logic holds operant resources as primary because they are the producers of effects. They are the fundamental source of competitive advantage. A customer is primarily considered as an operant resource, and only occasionally functioning as an operand resource. People exchange to

acquire specialized competences (knowledge and skills) or service. Knowledge and skills are also operant resources. The company cannot deliver value, but can only offer value propositions. Goods are a distribution mechanism for service provision. This means that goods derive their value through use and the service they provide. S-D logic also considers that service (singular), which is the application of specialized skills and knowledge, is the fundamental basis of exchange and that all economies are service economies. Still, because service is provided through complex combinations of goods, money, and institutions, the service basis of exchange is not always apparent, but rather masked by the indirect exchange (Vargo and Lusch, 2004; 2006; 2008).

Service is a process—consisting of a set of activities that takes place in interactions between a customer and people, goods and other physical resources, systems and/or infrastructures representing the service provider and possibly involving other customers—that aims at solving customers' problems (Grönroos, 2006). Customers are always the value creators. The supplier is a value facilitator in a process of joint value creation (Grönroos and Ravald, 2011; Grönroos and Gummerus, 2014). Value creation refers to customers' creation of value-in-use; co-creation is a function of interaction (Grönroos and Voima, 2013). Goods are resources like other physical objects. The company makes them available for money so that customers in their own processes will be able to use them in a way that creates value for them, as individuals, households, or organizations (Grönroos, 2006). The potential value for customers is embedded in all types of resources used by customers and such resources are used as service that renders value for them (Gummesson, 1995; Grönroos and Ravald, 2011). Companies often need a change of mindset for such a definition of value (Lähteenmäki and Nätti, 2013).

Lean Innovation

Lean/agile approaches were used in software development already in the beginning of the year 2000 (Schwaber and Beedle, 2001; Turk et al., 2006). Similar ideas were later used in the business development of startups and SMEs with the concepts of “lean startup” (Blank, 2006, 2013; Ries, 2011; Maurya, 2012) and “lean development” (Schipper and Swets, 2010; Ojasalo and Ojasalo, 2015d) and “lean enterprise” (Cooper and Vlaskovits, 2013). Blank (2006) introduced the customer development model as a “path to epiphany.” It is an iterative model including the phases of customer discovery, customer validation, customer creation, and company building. The major difference between this model and traditional product development models is the iterative process involving customers at each phase to discover the customer value.

In line with this, Taatila et al. (2006) defined four phases in the process that creates economic innovations: the period prior to the idea, idea development, implementation culminating in economic success, and the period after economic success. According to them (ibid. p. 316), “the processes are often iterative, i.e. return to earlier phases again and again.” Ries (2011) explains the principles of lean business development as follows. In his approach, the process is iterative and cyclical, and entails three steps: build, measure, and learn. The purpose of each iteration round is to bring the product or service to a more developed level. The aim is to minimize the total time through the loop. The first step is to enter the build phase as quickly as possible with a minimum viable product. The minimum viable product is that version of the product that enables a full turn of the build-measure-learn loop with a minimum amount of effort and least development time. It lacks many features that may prove important later on. The impact of the minimum viable product must be measurable. Most importantly, the impact must be measured, not just inside the company by engineers or designers, but also with potential customers to see their reactions. Next, in the measure phase, the most important challenge is to determine whether the product development efforts are leading to real progress. Instead of using vanity metrics, the metrics should be valid from the business viewpoint. It does not matter if the development project is on-time and on-budget if the company is building something that nobody

wants. The metrics need to be actionable, accessible, and auditable. The metrics is actionable when it demonstrates the cause and effect. It is accessible when it is understandable by those who are supposed to make changes in the product or service being developed. It is credible when it assures the employees about the fact (for example) that the product is insufficient and requires improvements. Finally, the learning phase represents the most vital phase of the loop. The company must learn the truth about which elements of the strategy are working to realize the vision and which are not working. The company must learn what customers really want, not what they say they want or what the company thinks they should want. The company must discover whether they are on a path that will lead to growing sustainable business. The company must decide whether to pivot or preserve the original strategy. If the company realizes that some original assumptions or elements of the strategy are false, it should make a major change in the strategy (Ries, 2011).

Maurya (2012) extended the lean approach by showing and visualizing various methods how to implement the lean development philosophy in practice. Engaging customers early in the innovation process, speed, field experimentation, trial, error, continuous learning, and incremental improvement are key elements of his report. According to Maurya, life is too short to build something nobody wants. Listening to customers is crucial and is the suitable method for that purpose. The release-early, release-often approach is the key to lean development.

Blank (2013) explained the lean startup concept further. According to him, the idea of lean startups or a lean business launch is based on observations from various failures with a traditional way to plan and launch a new business. Traditionally, it is considered that the development of a new business and startup begins with creating a business plan. Writing a business plan is based on the assumption that it is possible to anticipate most of the unknowns of a business. However, a business plan rarely survives its first contact with customers. Based on this, Blank (2013) argues that a business plan, which is a static document, is usually fiction, and dreaming it up is almost a waste of time. Instead of a big and ready master plan, successful startups go quickly from failure to failure, and adapt, iterate,

and improve their original ideas as they continually learn from their customers. The lean approach is based on the following foundation. First, the founders summarize their assumptions about the business in a framework called the business model canvas. Instead of spending months writing a business plan, entrepreneurs quickly summarize their best hypotheses (in other words, guesses) by using Osterwalder and Pigneur's (2010) business model canvas (see also Ojasalo and Ojasalo, 2015a; 2015b; 2015c). Second, lean startups go out and visit their customers and other stakeholders and start testing their guesses. They test all relevant elements of the business model, such as product or service features, pricing, channels, and affordable customer acquisition strategies. Based on the input, they revise their assumptions and start the cycle all over again. The ideas are refined through improvements in an iterative and incremental process as it becomes visible which ideas work and which do not. According to Cooper and Vlaskovits (2013), a learning organization runs experiments to reduce market and technical risk, test new ideas, and optimize results, and it interacts with customers to assess the correctness of the assumptions about solving the customers' problems. The third foundation is agile development, which takes place together with customers and eliminates wasted time and resources. Startups create the "minimum viable product". As explained above, a minimum viable product or service has just those core features that allow the product to be deployed to potential customers for feedback, and no more (Ries, 2011). This iterative and incremental process is called quick, responsive development, where the minimum viable product is improved through repeated cycles. A similar approach is also known as rapid prototyping, which refers to a design process that begins directly with something that represents the designer's best guess at producing something that looks and feels the way a desired endpoint is expected to work and is subjected to iterative use and modification until it meets those expectations. The developmental objective is to make it fast and make it real (Desrosier, 2011; Tripp and Bichelmeyer, 1990).

A startup is not a smaller version of a large corporation. Established companies know their market, but startups often do not know well who their customers are, what they want, or how to get them to

buy. They need a different way to bring new a product to market. Indeed, the lean development approach was originally designed for startups (Blank, 2006). But the lean startup methods may not be appropriate for every situation. According to Owens and Fernandez (2014), the lean startup method poorly fits projects that are already in motion (legacy projects), products that have reached a product/market fit, products that must match preexisting specifications, and products aimed at regulated industries.

In conclusion, the existing lean development models emphasize an early understanding of customer value. This principle is well in line with the fundamentals of S-D logic. Indeed, it has a lot to offer for those who are interested in applying S-D logic in service innovation. But so far, these two research streams have not yet met each other.

Model of Lean Service Innovation

Value-in-use is one of the fundamentals of S-D logic (Vargo and Lusch, 2004); this means that value is uniquely and phenomenologically perceived and determined by the customer, and it is experimental and contextual in nature. Consequently, in successful service innovation, it is paramount to deeply understand what represents value-in-use as well as to develop and enable the integration of the resources accordingly. This refers to understanding the context in which value is perceived. According to Edvardsson and Tronvoll (2013), value-in-use must also be understood as part of a collective social context, and accordingly, service innovation is embedded in a social system. They refer, as an example, to furniture-seller IKEA, which has actively developed ways to learn about ordinary people's lives, including cultural contexts and life stages (e.g., families with or without children, elderly people, and disabled people). The focus in their case is not on the offered products but how customers can use those products in the context of their consumption at home (Edvardsson and Tronvoll, 2013, p. 25). Magnusson et al. (2003) conducted an empirical study on user

involvement in service innovation. They argue that it is not enough to merely ask the customers if they have any ideas, but instead activate them into experimentation and problem-solving in their own day-to-day environment. The value-in-use to the customer does not occur in isolation but rather through integration of resources from many sources, thus best understood as holistic experiences (Vargo and Lusch, 2016b). S-D logic is philosophically grounded on a commitment to collaborative processes with customers, partners, and employees, as well as a perspective that recognizes the company and its exchange partners who are engaged in the co-creation of value through reciprocal service provision (Lusch et al., 2007). As shown in the previous section, such collaborative and co-creative processes in understanding, developing, and creating value-in-use can be facilitated with lean service innovation, which is based on learning from and experimenting with customers and other relevant actors through a co-creative and cyclical innovation process.

Next, we propose a Model of Lean Service Innovation. This conceptual model is based on the ideas of S-D logic and lean business development. According to Schipper and Swets (2010), six principles make development both innovative and lean. They are (1) identify and fill user gaps, (2) use multiple learning cycles, (3) stabilize the development process, (4) capture knowledge, (5) use rapid prototyping, and (6) apply lean management principles, including learning cycles and visual boards. The whole development process consists of several repeated and incremental development cycles. According to Blank (2013), each cycle consists of planning, requirements, analysis and design, implementation, testing, and evaluation. Each development cycle results in a minimum viable product which is deployed for customer feedback. Based on the literature on lean development (Blank, 2006, 2013; Schipper and Swets, 2010; Ries, 2011; Maurya, 2012; Cooper and Vlaskovits, 2013; Owens and Fernandez, 2014), we propose a model of lean service innovation (Figure 1). The model of lean service innovation consists of the following phases and activities: deep customer understanding & co-creation, need & problem identification, solution idea(s), solution design, experimenting & rapid

prototyping with customers and other stakeholders, evaluation, full-scale implementation, possible abandonment, and possible identification of new customer needs and problems.

Deep customer understanding & co-creation: The whole process of lean service innovation is guided by the attempt to achieve deep customer understanding and co-design. This refers to understanding the customer's everyday life, each detail of it, and the world they live in or operate their business.

Preliminary need & problem identification: The innovation process starts with the preliminary identification of the customer need and problem. This may happen based on changes in the business environment, the emergence of new technologies, customer complaints, etc.

Solution ideas: Next, one or several ideas for a solution are proposed. The most promising is chosen for development.

Solution design: The solution design consists of designing a solution that is developed enough to be reasonably tested with customers and/or other relevant stakeholders of the service. The solution gets an incremental improvement and results in the next-level version. This can also be called a minimum viable product (MVP), minimum viable service, or service prototype.

Experimenting & rapid prototyping with customers and other stakeholders: Next, the current version of the solution is tested and experimented with authentic customers. The purpose is to gain deep customer insight on how the proposed solution responds to their needs and problems. At the same time, the aim is to make the experimentation and rapid prototyping as fast and real as possible.

In addition to customers, this phase may involve any other relevant stakeholders of the solution.

Evaluation: In this phase, all the learnings from the previous phase are carefully analyzed. Then the decision is made on how to proceed in the innovation process. Three options are available. First, the process may go back to the development phase, in which the experiences from testing and experimenting are used to improve the current version of the solution. Second, the solution idea may turn out to be ready for full-scale implementation. Third, it may turn out to be too inappropriate for its purpose and further development.

Learning & refining loop: The learning & refining loop refers to the repeated sequence of the phases of solution design, experimenting & rapid prototyping with customers and other stake-

holders, and evaluation. This loop is at the heart of the lean service innovation approach. It makes the service innovation process “lean.” *Full-scale implementation*: This phase is about full-scale implementation of the developed service. The service solves the targeted problem and generates revenues for the service company. The whole lean service innovation process can be understood as gradual implementation. However, once the service innovators are convinced that the new service is developed enough to meet the customer value as well as business objectives, it is ready for full-scale implementation in the marketplace. *Abandon*: If the company finds that it cannot for some reason develop the idea into a service that provides value to customers and generates profits for the company, the idea is abandoned. When a certain solution idea is abandoned, the process may return to the solution ideas phase, and another idea may be taken up for further development (lower dash line). The learnings from the previous attempt are utilized in the next one. *Possible identification of new customer needs and problems*. It is also likely that totally new customer needs and problems are identified based on the increased customer understanding and co-design (upper dash line). They have the potential to start a new innovation cycle. They represent new business opportunities for the service company.

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Figure 1. Lean service innovation.

The lean service innovation approach is used throughout the service innovation process. Case-specific development methods are applied for solution development, testing, and experimenting. Various service design methods can be powerful here. Examples of widely used service design tools include ethnography, probes, contextual interviews, environmental scanning, content analysis, Delphi, ideation workshops, design games, trend cards, personas, storytelling, futures wheel, scenarios, service ecology maps, customer journey maps, prototypes, sociodrama, visioning, change paths,

multilevel service design (including service blueprint), and role scripts (Ojasalo et al., 2015). As the lean process is iterative, it means that, if necessary, a different service design tool may be used in different rounds. In addition to learnings and qualitative feedback from testing and experimenting with customers, several quantitative metrics can be used in evaluation. These measures are always case-specific, depending on the nature of the service and business goals. However, the metrics should be actionable, meaning that they tie specific and repeatable actions to observed results (Maurya, 2012). Metrics that not offer insights into how and why something happens, or what to do next, are not actionable.

Discussion and Contribution

The main contributions of our article relate to the knowledge gaps identified and discussed in the beginning of this paper. They are the early identification of the core customer value with business potential, in-depth understanding of customer value for new/potential customers, discovering and utilizing latent needs, and a managerial framework that in many cases helps in applying S-D logic in practice.

The present lean service innovation approach facilitates the *early identification of the core customer value with business potential*. This is because the cyclical innovation process based on rapid prototyping allows quick realization of which ideas are viable and deserve further refinement, and which should be abandoned. Consequently this has two advantages. First, it makes useless investments less likely in the further development of a non-viable idea; in other words, the innovation becomes less risky. Second, it speeds up the innovation process—the time to market—since the innovators find the right direction at an early stage of the process. While the literature on innovation points out the speed of the innovation process (Stalk and Hout, 1990; Gassmann, 2006; O'Regan et al., 2006; Barkema et al., 2002), very little research exists on how a service innovation process could

be speeded up. Niosi (1999) and Berkhout et al. (2006) explain the evolution of innovation process models and show how the traditional linear innovation models have been replaced by flexible, cyclical, and interactive models. According to Berkhout et al. (2006), cyclical interaction is the basis for modern control and a precondition for operational flexibility and the inspiration for creativity and a necessary condition for sustainability. Human actors are constantly confronted with the feedback about the consequences of their actions, preferably through built-in 'early signals'. Consequently, quick adjustments can be made in the event of surprises. The cyclical innovation process also ensures that mistakes can be learned from, which is a very important property of innovation. Cyclic interaction is considered as a prerequisite for the model of dynamic systems as well as for the network structure of competitive organizations. Most importantly, the cyclical innovation process facilitates fast innovation, based on the principle "start quickly, adjust quickly and learn quickly" (Berkhout et al., 2006, p. 393). The current lean service innovation approach contributes to fast service innovation through its basic idea of cyclical rapid prototyping and learning. This approach is supported by some of the earlier literature. Von Hippel (2002) explains how to turn customers into innovators by enabling them to run repeated trial-and-error experiments and tests rapidly and efficiently. Rapid prototyping with customers helps in effectively acquiring "sticky information" and using it in innovation (von Hippel, 1994; von Hippel and Tyre, 1995). The idea of rapid prototyping has been applied in the software industry (Gordon and Bieman, 1995), but it is now spreading to other industries and the service and social fields (Maurya, 2012). Supported by this, we argue for the applicability of rapid prototyping and learning in service and use it as the cornerstone of our model of lean innovation of service. The lean service innovation approach aims at first discovering the most important aspects of customer value as soon as possible, and then keeping these aspects as the central guiding factor throughout the process. This means avoiding the temptation to include many features in the initial development, since time will be much better spent developing experiments that measure the impact on perceived customer value. Later on, if the idea of core customer value is viable enough, it will be

planned in detail and complemented with secondary features during the process. Features should be pulled, not pushed (Maurya, 2012).

Customer value for new/potential customers. Companies tend to innovate based on the expressed needs of their existing powerful customers. This is called the tyranny of the served market (Hamel and Prahalad, 1991), and it tends to lead to incremental innovation (Slater and Narver, 1995). This is particularly true for established companies where senior managers are unwilling to risk their careers with potential failure in innovation for new/potential customers (Bower, 1970; Christensen and Bower, 1996). As discussed earlier, lean innovation helps in the early identification of viable new service in the innovation process, and thus makes less likely a massive investment in an innovation process that does not lead to commercial success. This is likely to lower the barrier to try something fundamentally different, even in established companies and corporations. Indeed, referring to the innovator's dilemma (Christensen, 1997), most large companies begin as innovators, then when they grow and reach dominance, they have a market to protect, and their original focus on disruptive innovation shifts to sustaining innovation. The lean innovation approach, which originates in the startup context, is not just for startups; it can also be used in large companies' innovation (Owens and Fernandez, 2014). Discoveries of a significantly new kind customer value become more likely to occur in lean service innovation, which can create a new market. The proposed model also shows how unexpected aspects of customer value can be used as the basis for developing another new service. This helps in responding to invisible and mental aspects (Heinonen et al., 2010) of customer value that are experienced in their daily lives. In addition, the present model explicitly shows that terminating the service innovation process is not necessarily an indication of failure. Sometimes the initial idea for a new service just turns out to be something that is not valued by the customers. Or the company sees that it cannot facilitate the value creation in a sustainable and profitable way with its resources. In such cases, terminating the innovation process is a sensible decision and prevents later failure and a further waste of resources and time.

Latent needs represent a special challenge but also an opportunity for service innovation. Companies have traditionally focused on satisfying expressed customer needs and have omitted latent needs (Matthing et al., 2004; Hamel and Prahalad, 1991; Christensen and Bower, 1996; Slater and Narver, 1995). This tends to lead to a minor improvement rather than radical innovation (Harari, 1994). The challenge with latent needs is that customers have trouble in imagining and giving feedback about something that they have not experienced (von Hippel, 1986; Veryzer, 1998; Leonard and Rayport, 1997; Ulwick, 2002). The literature includes various techniques for customer involvement in service innovation (see the literature review by Matthing et al., 2004; Alam, 2006; Carbonell, 2009). Customer participation in the innovation process and observation of the customer in real action are common methods suggested for developing service that meets latent needs (Matthing et al., 2004). Examples of such methods include emphatic design based on observation (Leonard and Rayport, 1997), the customer-input uncertainty method (Martin et al., 1999), co-opting customer competence (Prahalad and Ramaswamy, 2000), focusing on fuzzy expectations and revealing implicit expectations (Ojasalo, 2001), generation of service ideas (Matthing et al., 2004), and various participatory service design techniques (Ojasalo et al., 2015). The existing literature includes various single techniques for discovering latent needs. However, if their use is not built into the process, there is no guarantee that any of them will be used. The present lean service innovation process inherently includes repetitive use of experimentation and testing methods that systematically involve customers throughout the process and help in discovering and utilizing customers' latent needs in co-creation. This approach is supported by earlier research stressing customers' continuous involvement throughout the innovation process (Cooper, 2001; Vandenbosch and Clif, 2002; Souder et al., 1998; Ojasalo et al., 2015).

Managerial framework for application of Service-Dominant Logic. The existing literature on S-D logic is based on creation of customer value (Vargo and Lush, 2004; Lusch and Vargo, 2014). However, this literature is scarce in providing managerial approaches for implementing the ideas of

S-D logic in practice. A clear contribution of the proposed model of lean service innovation is that it offers a systematic managerial framework for this purpose. It shows a way how service developers will get a deep understanding of the value perceived by the customer through an innovation process that involves customers and proceeds through iterative incremental development rounds. It highlights that customers should be engaged already from the beginning of the innovation process. This prevents making wrong assumptions about the value at the outset. The service is thus less likely to make useless investments and wasting their time. Rapid prototyping and learning is at the heart of the introduced model. The understanding of the customer value increases incrementally through consecutive repeated rounds. The customer value guides the innovation process at all times rather than assumptions made in-house. The present approach emphasizes the involvement and role of people rather than tangible assets. In other words, it shifts the focus from operand to operant resources (Vargo and Lush, 2004) already in the service development phase, which is a fundamental change of mindset for many companies operating in the goods-dominant mode. In this way, the value becomes defined as the customer's creation of value-in-use (Grönroos, 2006; 2008; Grönroos and Ravald, 2011; Grönroos and Voima, 2013). Edvardsson and Tronvoll (2013; see also Edvardsson et al., 2011) point out the importance of understanding the social context in which innovation takes place, the service system, social structures, resources, and the actors' abilities to acquire, integrate and use the available structures in the social context. The rapid prototyping and learning loop illustrated in the present model makes possible a deep understanding of customer needs.

The earlier lean innovation literature is mostly focused on helping startups to develop successful products with customer value (Blank, 2006, 2013; Schipper and Swets, 2010; Ries, 2011; Maurya, 2012; Cooper and Vlaskovits, 2013). The present article extends the startup focus to a broader arena, the service industries on general. Achieving a deep understanding of what represents value to the customer is the foundation of both S-D logic and lean innovation. The present model of lean service

innovation offers a simple framework for any company aiming at developing service in terms of S-D logic.

Research opportunities for the future

From value propositions to business models. Knowing what represents customer value is vital, but much more is required to turn it into a profitable business. The company needs a scalable and profitable business model. The role of a business model is to capture, visualize, understand, and communicate the business logic (Osterwalder, 2004). A value proposition is the central building block of any business model (Chesbrough, 2007). According to Skålén et al. (2015), service innovation must be conducted and value propositions must be evaluated from the perspective of the customers' value creation, the service that customers receive. The company must consider what service the customers receive (resources) and how they receive it (practices). In addition to the value proposition, a business model includes many other building blocks required in building and maintaining the business (Chesbrough, 2007). Ultimately, a business model must define a framework for the service business that is scalable and profitable, in other words, that allows the company to make money (Osterwalder and Pigneur, 2010). The literature on S-D logic explains the nature of the value proposition (e.g., Lusch et al., 2007; Grönroos and Voima, 2013; see the literature review of Skålén et al., 2015). However, business models have attracted much less attention by service researchers (Nenonen and Storbacka, 2010; Kindström and Kowalkowski, 2014; Ojasalo and Ojasalo, 2015a). Taking the innovation process from the value proposition level to the business model level is based not merely on the company's discovery of what creates customer value, but also on the customers' willingness to pay for it as well as the company's capabilities to orchestrate the resources required in the facilitation of value creation. Expanding the service research from value propositions to business models with a S-D logic lens is clearly a promising avenue for further research.

Management of customer involvement in innovation. The vast amount of the literature on co-creation mostly ignores the challenges of customer involvement in innovation. This may give the illusion that customers are self-evidently able or willing to participate. Logistical and economic considerations (Wayland and Cole, 1997), lack of incentives or appropriate infrastructure (Nambisan, 2002), and language (Lundkvist and Yakhlef, 2004) are examples of such challenges. Since S-D logic relies on co-creation and customer involvement, there is an evident need to increase knowledge in this area. Various methods of connected research (Schillewaert et al., 2008) and service design (Ojasalo et al., 2015) may function as a fruitful starting point for examining more effective and efficient customer involvement in service innovation. Similarly, considering the service-related use situation and resource context (Edvardsson et al., 2010) is likely to open up various opportunities for future research in customer involvement.

Service design in lean service innovation. In their extensive study on service research priorities, Ostrom et al. (2015) found that leveraging service design is a key research priority. Service design approach (Blomqvist et al., 2010; Zomerdijk and Voss, 2010; Patricio et al., 2011; Wetter-Edman, 2011; Ojasalo et al., 2015) includes various methods for understanding customer value and designing service for it. They help in diagnosing and revealing the customers' mental models and in forming a picture of their needs and translating these needs into an offering that truly matches their need (cf. Strandvik et al., 2012). Since customer-experienced value is at the heart of service design, it has a great potential to facilitate the application of S-D logic in the managerial context. Moreover, service design has much to offer to lean innovation as well, because it includes many user-centric and experimental development tools that are also essential in lean innovation. However, so far, service design has mostly been a practitioner approach with little scientific theory development. Examining service design in the context of lean service innovation offers interesting possibilities for further research.

Speed of innovation cycle time in service. The fast-changing markets and technologies (Drucker, 1998) force companies to accelerate their innovation life cycle times (Enkel et al., 2009). Reducing product development cycle time, and hence the time to introduce a new product, creates relative advantages in market share, profit, and long-term competitive advantage (Karlsson and Ahlstrom, 1999). Slow product development has a higher development cost for organizations (Gupta and Wilemon, 1990; Hairman and Clarysse, 2007). A significant cost associated with being late to market is the possibility of losing that market (Goktan and Miles, 2009), particularly in environments characterized by competitive intensity (Kessler and Chakrabarti, 1999) and for firms facing rapid technological change, such as high-tech industries (Parry et al., 2009). While being a vital factor in successful innovation in many industries, the time aspect—speed of innovation cycle—has not attracted any greater interest in service research. According to Alam and Perry (2002), “Developing a superior service is important but a faster NSD process is also crucial in service industries.” Some research reports have touched upon the speed of innovation process in service (Blazevic and Lievens, 2004); however this area has mostly remained unexamined. The concept of rapid prototyping in our model addresses the speed of the innovation life cycle. However, this area deserves more profound research and theory development.

Organizational change from linear to lean innovation. Adopting S-D logic often requires a change in mindset (Lähteenmäki and Nätti, 2013), organizational logics and practices (Skålen and Edvardsson, 2016) that guide employees’ behavior and sense-making with respect to value creation (Skålen and Hackley, 2011; Thornton and Ocasio, 2008). It is likely that the transformation from linear to lean service innovation requires several organizational changes. More research is needed in the structural, institutional, political, and learning processes of such change (cf. Hannan et al., 2003). Interesting aspects of examining the change from linear to lean innovation may cover, for example, the change in strategic thinking and strategy, the phases of the change cycle, the role of leaders at different organizational levels, leadership styles, stakeholders of change, executive support, change

champions, openness of the change process, rewards for change, measures for change, and pitfalls (Smits and Bowden, 2015). Also, various change management philosophies and their relevance from linear to lean innovation may offer an interesting starting point for further research. Examples of organizational change philosophies include biological, rational, institutional, resource, contingency, psychological, political, cultural, systems, and postmodern philosophy (Graetz and Smith, 2010).

Conclusions

The purpose of this paper was to propose an approach for lean service innovation. Both S-D logic and lean business development are based on the common philosophy of creating value as perceived by customers themselves. Yet so far, the S-D logic literature has not utilized the ideas of lean development. Since lean innovation has become a powerful approach for innovation and business development, we applied its principles to S-D-logic-based innovation. As a result, the article developed and proposed a model of lean service development. The present lean service development approach shows how a new service can iteratively be developed through several improvement rounds into a final business model. Such an approach is likely to facilitate further theoretical development of service innovation as well as practical application of S-D logic. In particular, the lean service innovation facilitates the early identification of the core customer value with business potential, creating customer value for new/potential customers, as well as discovering and utilizing latent customer needs in service innovation. In addition, it extends the startup focus of lean innovation literature to a broader arena – to any context where innovation follows the ideas of S-D logic. Several areas of research were proposed for further development of theory and practice. They include business models in lean service innovation, management of customer involvement, service design, speed and time aspect of innovation cycle, and organizational change from linear to lean innovation.

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