Service Innovation

3

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Summary

This chapter gives an introduction to innovation management in a services context. First, basic definitions and types of innovation are presented. The history of service innovation research and its origins in manufacturing innovation are outlined. The main part of this chapter introduces and applies relevant methods that can support projects for new services development. The last section elaborates on the servitization of manufacturing. It emphasizes the importance of services for the manufacturing industry and presents five types of integrated product service offerings.

Learning Objectives

1. Understand the basic concepts and types of innovation.
2. Identify particular challenges and opportunities of innovation in services.
3. Know how to approach a service innovation project and be able to apply relevant methods to support it.
4. Understand the motivation of companies to servitize and be able to differentiate different types of product service systems.

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Opening Case Massive Open Online Courses (MOOCs)

In late 2011, the internal training services provider of a large German logistics corporation was faced with a challenge. The unit found itself in a currently comfortable, yet fragile position: The department still had an exclusive supply-agreement with the entire company, as it used to be the case for many internal service providers. However, as presented in Chap. 1, the last decades have shown that a large share of services that used to be provided internally are now being outsourced to specialist companies. Examples for this development include IT departments, call centers, helpdesks, and building services.

The CEO of the training services provider envisioned similar possibilities for his unit, meaning that they would have to become competitive in the market place in order to win future training engagements. This implied a number of challenges for the organization. The central question to be addressed was identified as:

> How can we use modern IT infrastructure and teaching formats to offer competitive training services?

IT infrastructure was identified as a key challenge for the organization, since competitors had increasingly been using modern IT technology to support their training programs, and were therefore at an advantage. However, in combination with new teaching formats, this could also represent an opportunity for the organization, through which it might be able to differentiate itself from other providers, and offer attractive, competitive training packages.

A promising format that was quickly identified is called Massive Open Online Courses (MOOCs) (Fig. 3.1). MOOCs were first used at universities in the United States, and were introduced with the idea of making education and knowledge available to anyone with an internet connection. Consequently, courses that had previously only been taught live at universities to a comparably small number of anywhere from a few to several hundred students, were made available to anyone signed up with one of the MOOC platforms—a theoretically unlimited number of participants.

Examples for MOOC platforms in the United States include edX (www.edx.org) and Coursera (www.coursera.org). Last year, a consortium consisting of Stanford University, Google, MIT, and other leading universities, enabled an open source adaptation of edX, called OpenEdX, which will allow universities and other organizations to use the existing know-how contained in the platform to offer their own courses, and to integrate them with the courses already available on the edX platform.

But how would the training provider be able to react to and make use of these developments? The identified opportunities quickly led to the question of how they could re-invent their business model and offer new services, based on the MOOC concept. A service innovation project involving experts from different areas of the organization was kicked off. The key challenge in the project was getting the employees and managers to think outside their current organization's processes, routines, and service portfolio.

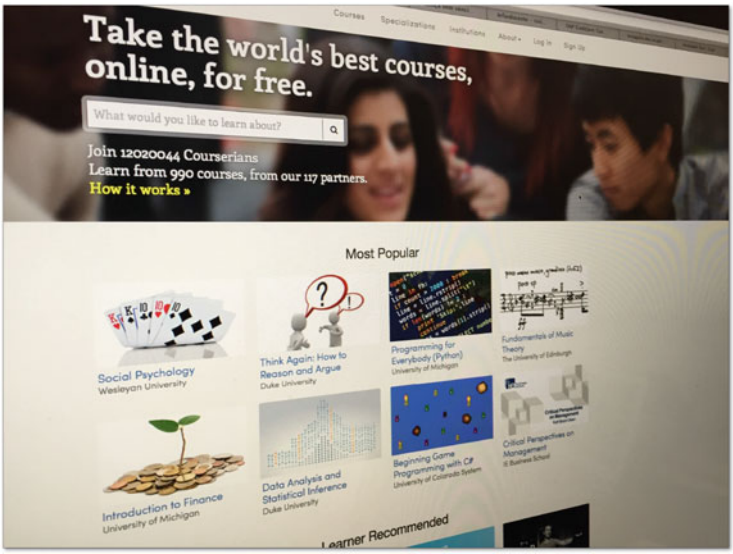

Fig. 3.1 A MOOC platform offering several online courses for free

The methods used to guide the team in exploring the design space available to them, in finding ideas, evaluating, developing, and selecting promising solutions, are a defining factor of such a service innovation project. This means that the services address actual needs of current or potential customers not being met by competitors' offers. This can be supported by methods analyzing the customer ecosystem, the competitive structure of the industry, and available services in the market. Being feasible on the other hand means that a newly developed service can be integrated with the company's existing resources, capabilities, employee base, and customer channels. This is supported by specific methods, which analyze the components of a service offering, from required resources to the value proposition.

In the case of the training provider, the service innovation methods helped define a new training package that can be used to educate employees in highly specialized areas, such as machine and infrastructure maintenance. However, the application of these methods is not bound to a specific context or domain—it is perfectly appropriate to apply the methods in other sectors, such as entertainment, health care, professional services, as well as banking and insurance services.

► Opening Case

3.1 Introduction

Due to its importance for companies' competitive advantage, innovation has been a focus of management and business research for many decades. One of the first authors to formally define innovation was Schumpeter [1]. The following seminal definition is based on his works and is still the foundation for many recent definitions of innovation:

▶ **Definition (Innovation)** An innovation is the combination of a novelty and its introduction to a market. The novelty can either be newly discovered, or re-used in the context of this innovation.

The study of innovation has traditionally been rooted in manufacturing and goods-based industry settings. With a growing share of economic value being created in the service sector and through the servitization of many established industry firms (see Sect. 3.3), increasing attention has been directed towards service innovation.

R As in Chap. 1, the terms *service* and *good* are used to distinguish the two concepts, and *product* is used to refer to them together.

3.1.1 Types of Innovation

Among the many typologies that formalize degrees of innovativeness or novelty of innovations, Henderson and Clark [2] have supplied a frequently used one. The authors analyze innovations along two dimensions, thus introducing a categorization of possible types of innovation (cf. Fig. 3.2). The first dimension describes the degree of change in the employed core concepts, the other dimension describes the degree of change in the linkages between these core concepts. The core concepts represent the building blocks of an innovation and can be existing products, technologies, infrastructure, or resources in general. The linkages between the core concepts characterize the way in which the concepts are connected to form a new offering. This can include technical interfaces, physical integration, and the connection of different service components.

For example, the introduction of video-chat technologies, such as the service Skype, was an innovation that reused existing core concepts in the sense of existing infrastructure and communications protocols, and arranged them in a novel way (changed linkages between core concepts) to produce a service innovation. This is categorized as an architectural innovation according to Henderson and Clark, a category that many service innovations belong to.

The other three categories are named incremental, modular, and radical innovation. An incremental innovation exhibits only minor changes in comparison to an existing product, and does not significantly change the core concepts or the linkages between them. A service example of an incremental innovation would be to add storage space to an existing website hosting service. A modular innovation changes some of the core components of a product, while their linkages remain mostly

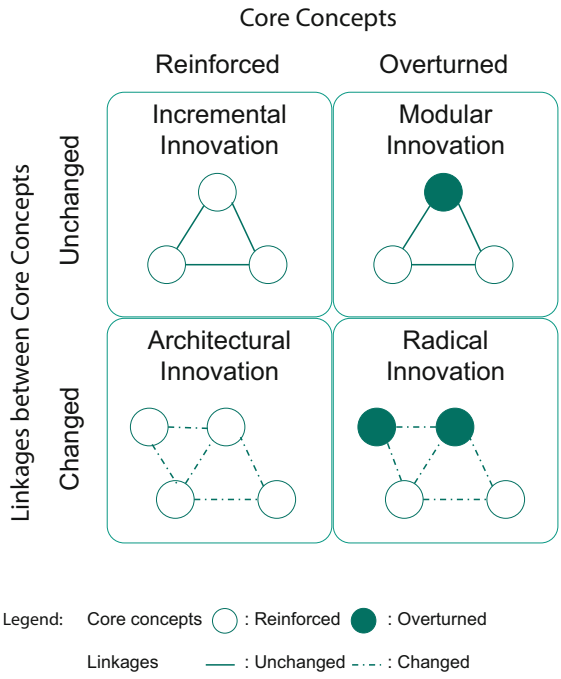

Fig. 3.2 Types of innovation according to Henderson and Clark [2]

unchanged. An example of a modular service innovation would be to introduce a new fitness and spa program at a hotel, which previously only had a basic wellness offering. The wellness component of the service offered by the hotel is new, but it is linked with the other components in an unchanged way. Lastly, a radical innovation introduces new core concepts, and links them in a new way. A radical innovation was for example constituted by the introduction of the PayPal payment service. This service introduced new concepts, for example an account based on a user's email address, which allows payments by credit card without revealing the user's credit card information. This service also introduced new linkages, for example by integrating itself with existing payment services offered by other financial institutions and by offering interfaces to webshop providers.

As a consequence, PayPal has had a significant impact on the market of payment services. Research applying such a market-oriented perspective has led to a distinct stream of research and definitions. For example, the introduction of micro-payment loans may be considered innovative by a traditional retail bank today, but judging from the market's point of view, this service already exists and does not constitute any mentionable innovation.

Another widely discussed type of innovation is *disruptive innovation* as introduced by Christensen [3]. A disruptive innovation is novel for an entire market or industry, and which changes established industry structures.

As suggested in this short example on banking services, the classification of an innovation depends on the perspective employed. For example, an innovation from an industry-leading company does not need to be radical to be disruptive for a market. As an example, various Google services come to mind that reuse parts of existing Google services, databases and infrastructure, but have completely changed established markets, such as online navigation. On the other hand, a laggard company might develop what they consider a radical innovation, but this does not mean that it is going to be considered novel or disruptive by its customers or other players in the market. Whether to classify an innovation as incremental, radical or disruptive thus depends heavily on the perspective taken.

3.1.2 Service Innovation

The traditional economic and marketing view of value creation and innovation is based on manufacturing and exchanging goods and is therefore called a goods-dominant logic. With the increasing economic importance of services, this view has been challenged. In the marketing literature, Vargo and Lusch [4] have introduced the alternative concept of a service-dominant logic, which has become a foundation for the area of service science.

While important to companies and economies, *service innovation* is a complex phenomenon. Early research on this topic posed the question of whether service firms actually innovate at all [5]. Having established that service firms do innovate, but differently than industrial firms, service innovation has been studied from a variety of perspectives. One difficulty is posed by the large variety of service sectors (see Chap. 1), which makes it important to concentrate on a certain service environment in order to yield relevant insights [6].

Service innovation is an area of research of high relevance for service science [7], however it is still a nascent area. As a consequence, no commonly agreed upon definition has been established. A definition that captures several important dimensions of a service innovation is provided by den Hertog [8].

► **Definition (Service Innovation)** The novelty in a service innovation can be constituted by changes in one or several of the following dimensions: Service concept, customer interaction, value system, business partners, revenue model and organizational or technological service delivery system.

Authors have taken different approaches in delineating service innovation from innovation in goods-based industries. Broadly speaking, three approaches can be identified [9]:

- The *assimilation approach* implies that innovation in the manufacturing and in the services domain are, generally speaking, of the same nature and pose comparable challenges to organizations. Consequently, the two phenomena would not have to be studied separately.

- The *demarcation approach* represents the extreme opposite opinion. According to this point of view, innovation in goods innovation in services are entirely distinct and need to be investigated separately, with regard to their challenges, and their supporting methods, processes, etc.
- The *synthesis approach* introduces the thought of mutual enrichment: In tackling the challenges of innovation in service organizations, one can learn from the rich history of research on manufacturing and industry-based innovation. On the other hand, services and service innovation prominently feature some aspects that might become increasingly important for goods-based innovation, and which might inform management decisions in that domain as well.

R Due to the emergent nature of service innovation research, there is an ongoing debate on the applicability of the individual approaches. As in many contemporary publications, this contribution builds on the synthesis approach to service innovation.

An important determinant for the management of service innovation in an organisation is what type of innovation the firm aims to introduce. This has important implications for the firm's innovation activities, partner management, and so on.

3.2 Managing Service Innovation

The management of service innovation is impacted by a large number of factors. Besides the design of roles and responsibilities, processes and other organizational characteristics, on an individual innovation project level, the methods employed by the team have a determining role. There is a multitude of methods available to support service innovation projects.

In this chapter, the focus is placed on the early phases of such projects, concentrating on methods that support the development of goals and a scope, as well as ideas that can subsequently be further developed and implemented. The subsequent phases of an innovation process are addressed in the following chapters. Chapter 4 on service design ties in particularly closely with the concepts and methods presented here. To get a wider understanding of the area of service innovation management, please consider the section further reading at the end of this chapter.

The definition of service innovation introduced above highlights the multiple dimensions of the concept. This ties in closely with recent publications on business model innovation. Osterwalder and Pigneur [10] introduce the business model canvas as a way of analyzing the features and newness of a new product. This illustrates that a service innovation does not necessarily have to deliver a new value proposition to a customer to qualify as such. Offering an existing value proposition by means of different channels, or in different organizational configurations, also is an important facet of service innovation. The business model canvas decomposes a business model into complementary units, which can be analyzed and modified

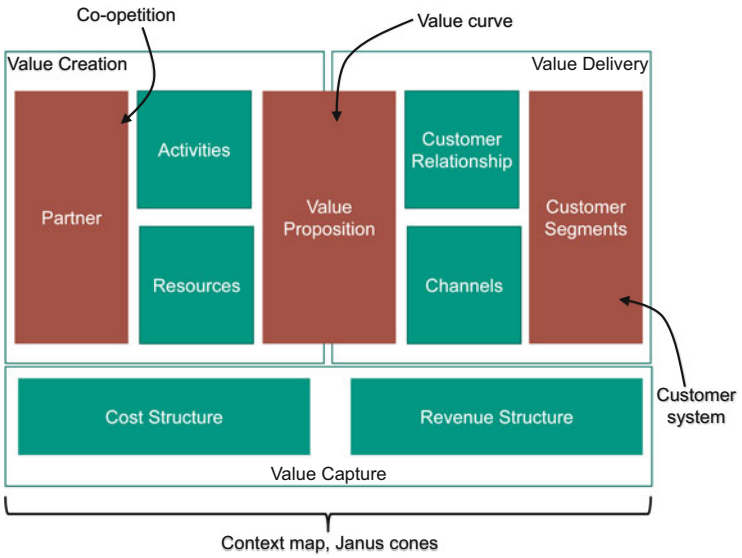

Fig. 3.3 Overview of the business model canvas and connection to the presented service innovation methods (based on Osterwalder and Pigneur [10])

to identify potentials for service innovation, and which can act as a framework for pulling together and complementing the insights collected through the application of the service innovation methods presented in the following. Figure 3.3 shows an overview of the canvas and connects its with the individual methods.

The following methods for service innovation projects represent a selection from a wide range of available methods and tools. This selection cannot be exhaustive, but attempts to cover a reasonable range of the dimensions of a service innovation, while still staying manageable. Further methods and tools can be found in the literature pointed out in Sect. 3.4 and through the URLs given at the end of this section.

Context Map The context map is one of the methods for the first steps in an innovation project and part of the foresight and innovation methodology developed at Stanford University [11]. The context map puts the central topic or opportunity to be addressed by the team in the center, and arranges the relevant dimensions around this topic. By capturing and discussing these dimensions, the problem space defining the team's challenge is properly explored.

Janus Cones Another early-stage method from the foresight and innovation methods collection are the Janus cones. They get their name from the ancient Roman god Janus, who is characterized by looking into the future and the past at the same time, and is typically depicted with two faces looking in opposite direction. Similarly, the Janus cones capture past events relevant to one's innovation project, allowing a projection of potential future events and their timing.

Customer System Services and hybrid offerings are often characterized and differentiated from pure goods-based offerings by their extent and frequency of customer interaction. However, especially in B2B contexts and more complex service networks, the customer is not necessarily a single entity. Therefore, the customer system differentiates the buyer, the user, and the influencer, and helps analyze their needs in a systematic way. This is a simplified version of the roles in a firm's buying centre as identified in the marketing literature [12].

Co-opetition The co-opetition framework by Brandenburger and Nalebuff [13] enables a view beyond an individual industry to connect a service provider's offering with those of suppliers, competitors, complementors, and customers across industries. This allows a view on a consumer's choice across the spectrum of offers, as well as the realization of synergies with and differentiation from competition.

Value Curve The value curve is a frequently used benchmarking and innovation method, introduced by Kim and Mauborgne [14]. Using this visualization, firms are able to compare their value propositions to those of the competition in a structured manner. This comparison is based on the identification of the relevant dimensions or attributes of the value proposition.

While the customer system, co-opetition model, and value curve help analyze particular aspects of the innovation, the context map and Janus cones methods help establish a general overview of the innovation topic and to generate ideas that guide further development in the course of the innovation project. In the following, each of the methods is discussed in turn. In this discussion, the methods are being applied to a case study in the area of health care services. Further application scenarios for the methods can be found in the exercises section at the end of the chapter.

3.2.1 Context Map

Service innovation projects aim to develop new offerings, sometimes even for unknown markets. As a consequence, often no concrete, objective, and measurable goal exists that a project team could work directly towards. First of all, consequently, the problem space and the concrete topic that the team wants to work on have to be elicited in greater detail. A helpful method to employ in this step is the context map [11]. When applying the context map method, the team should follow these steps:

1. Identify central topic.
2. Discuss and identify key dimensions.
3. Record related topics.

First, the central topic of the service innovation project is discussed in the team. This might sound trivial, but only by actually discussing and writing down the topic,

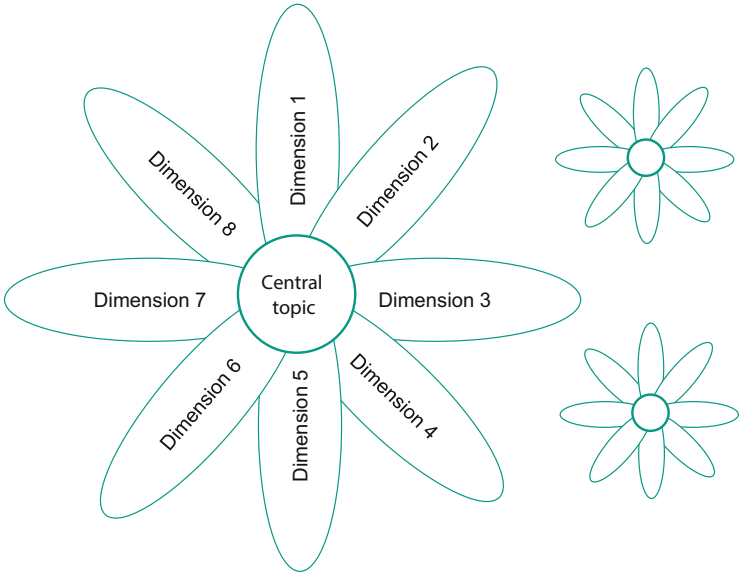

Fig. 3.4 Generic context map with two adjacent context maps for related topics

the team can make sure to obtain a shared understanding. Achieving this shared understanding of the topic to be tackled is essential, and investing time and effort here will pay off over the course of the project. Once a shared understanding of the central topic has been reached, it is written down in a circle in the middle of a sheet of paper, whiteboard, flipchart, or similar. This will form the center of the context map, as illustrated in Fig. 3.4.

Subsequently, the team should bring up, discuss and explore the most important dimensions of the considered topic, following standard brainstorming best practice [15]. In this phase, it is key to preserve all input that is brought up by the team members while discussing the innovation topic. It should be noted that at this point, the aim is not to come up with solutions for the topic discussed. This means that the team should capture all salient dimensions identified in the discussion, whether there is agreement or intense disagreement and argument on one of the dimensions.

Depending on the complexity and scope of the topic one chooses to tackle, several iterations or rounds of discussion might be required to get a good and mutually agreed-upon set of identified dimensions. The dimensions are then added to the central circle of the context map, giving it the appearance of a flower. It is recommended by the authors to draw eight petals [11], since this allows to capture a satisfying number of relevant dimensions, without introducing too much complexity. While this range of dimensions will help the team develop a focused understanding of the topic at hand, the number of relevant dimensions could of course be varied depending on the case at hand. It is important not to lose focus, though. One of the main advantages of the context map method over others, such as mindmapping,

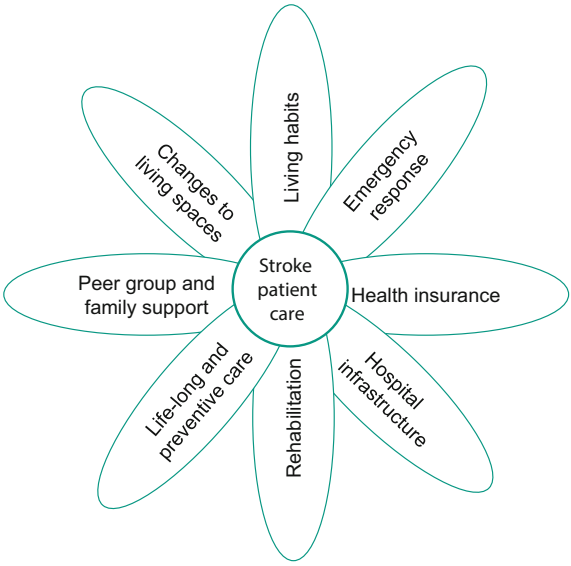

Fig. 3.5 Context map for topic stroke patient care

is its deliberate limitation to a small number of dimensions and to only one level of analysis (no sub-categories). This supports the team in sustaining a joint effort towards a common goal and makes the context map an important asset that should be compared to project developments on a regular basis.

Lastly, if dimensions are brought up that seem relevant, but more remote than the ones making up the original context map, the team can collect them in adjacent context maps. This can happen in concurrence with the second step and is also shown in Fig. 3.4. As with any of the methods presented here, the context map should be used iteratively. This means that at any point it is possible to jump back to an earlier topic or dimension and investigate it in more detail. The exercise ends when the team agrees on a (set of) context map(s), which capture the problem space adequately.

An application of the context map method to our health care services case study is illustrated in Fig. 3.5. Following the procedure described above, the topic stroke patient care is put at the heart of the discussion. Subsequently, the relevant dimensions of the topic are explored. Some dimensions, such as emergency response, health insurance, and hospital infrastructure directly come to mind when thinking about the acute and hospitalized phase of a patient's stroke. Other dimensions, such as rehabilitation, peer group and family support, and changes to living spaces are challenges that the health care system has to address in the post-hospital phase of stroke patient treatment.

Two other identified dimensions, life-long and preventive care and living habits could also be associated with this ongoing care phase. However, these dimensions highlight another aspect of stroke care: By taking certain actions proactively, and by changing some living habits, the risk of suffering from a stroke can be significantly

reduced. Two other dimensions were identified in this exemplary discussion. They are, however, not as closely related to the health care system as the other dimensions, and are therefore captured separately. Succession plans and personal finance and investments could be used to create adjacent context maps, or to check the topic's core dimensions for interaction with these personal finance and career planning aspects.

Having compiled this context map of the topic stroke patient care, an innovation team has gained a solid understanding of the relevant problem space, and has highlighted dimensions touching on all phases of the associated life cycle: From proactive care all the way to long-term changes and interventions in the post-phase of a stroke. These dimensions and the entities providing corresponding services represent a basis for exploring and evaluating the innovation topic further. Having gained a satisfactory understanding of the current state of stroke patient care, the next method presented helps explore possible development paths and future events that might change power structures in this system, or the needs of the people the new service concepts are aiming to support.

3.2.2 Janus Cones

Having identified the central topic and its most relevant dimensions, one of the next questions in an innovation project is how they will develop in the time to come. As a newly developed service will address future markets and customer needs, it is vital to explore likely developments and potential future events in addition to the status quo. This step in the innovation project can be supported by the *Janus cones* method, which helps in extrapolating historic events and developments to future ones. When a team employs this method, it should observe the following activities:

1. Decide on time frame to consider.
2. Collect and analyze past events and developments.
3. Try to extrapolate.

First, the team has to choose a time frame for the historic (and future) analysis. It is recommended to go back about twice as many years as one wants to look into the future [11]—the exact number of years will depend on the specific service innovation topic and its context. In the health care domain, for example, many historical events might have an influence on today's market situation, and an analysis should go back a number of decades. In other areas, nanotechnology for example, a focus on more recent developments might be sensible.

Next, past events and significant changes in markets and society, which have influenced the central topic of the innovation project, are captured. Carleton et al. [11] advise to perform some research before performing this group exercise—this can include desk and internet research and interviews with persons knowledgeable on the time frame and topic considered. The topics are captured in a dual-cone illustration, as shown in Fig. 3.6 for the health care case study. The left cone represents the past, and the further back an event lies, the further left it is put on

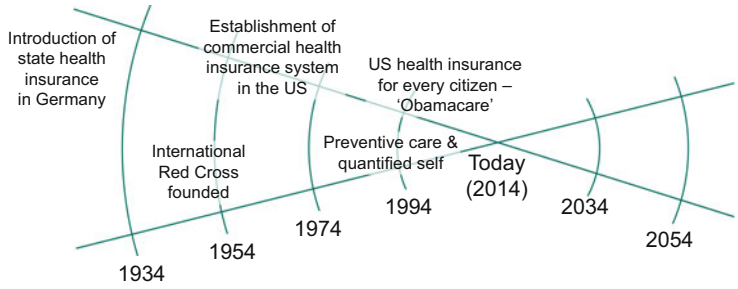

Fig. 3.6 Janus cones analyzing selection of health care history

the visualization. The circular lines indicate time intervals, which make the figure easier to read and support the comparison of individual events. Historical events and major changes are collected until the team judges the figure as informative and complete. As illustrated in the figure, the collected topics can be of very different nature—from major historic events to societal trends and development of technologies. However, they are characterized by their relevance for the investigated topic.

In this example, the consideration begins with the introduction of state health insurance in Germany, which was one of the first insurances in general and built the foundations for many services, such as the one being developed in the course of this chapter. Moving along the time axis, the foundation of the Red Cross is considered an important event, since it represents a major part of the infrastructure needed for the emergency response in the acute phase of stroke care. Health insurance systems in other countries, as exemplified by the US here, also play an important role as benchmarks for the new service development—both the introduction of the first commercial insurance system and the recent introduction of a comprehensive federal insurance system, colloquially often referred to as Obamacare. Lastly, the presented illustration considers recent relevant societal trends, such as the introduction of preventive care practices and the trend of measuring and quantifying oneself through personal logs and sensors. Of course, this is a small selection of possible relevant events and trends, and many more could be identified in the course of an innovation project tackling this topic.

White spots that are left in the collection of events can be filled by additional research, and further interviews with older relatives, etc. Once a rich left cone depicting relevant events and changes has been established, discussing these and their connections allows the team to move towards making statements about future developments and to start filling out the right-hand side of the picture. The most important insights can be gained by putting the past events and developments into relation with each other: When did certain trends and developments start? Have they gone in the same direction, or have there been opposing forces? What is the maturity of certain trends, topics, and technologies—are they still under development, or are they nearing their peak? Are there any constants in the emerging patterns that might be extrapolated into the considered future?

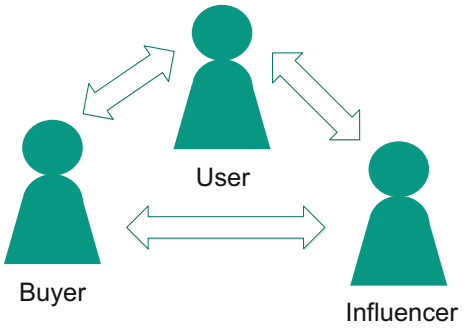

Fig. 3.7 Customer system highlighting relevant actors in purchase and consumption of a service

3.2.3 Customer System

When creating a new offering, it is essential to properly consider the customer's and other parties' perspectives. This is increasingly true in service systems that are growing more complex and are involving more actors. However, when talking about these other actors, it is usually difficult to consider a single, well-defined customer. As illustrated in Fig. 3.7, one does not only have to consider the person who purchases our service (buyer), but also the people he purchases the service for (user), as well as other people in his business and social environment, who might have an opinion on his purchase decision (influencer).

In our health care services case study, these categories would typically be populated by the relatives (buyer), the patient (user), and other actors, such as friends or health insurance companies (influencers). In designing a new service offering for stroke patients, consequently not only the affected person (the patient) has to be considered, but also the people making the decision between different service providers, and other parties such as friends, advertisement, etc., who influence their judgement. Please consider that the categories of the Buyer and the User can be populated by the same person(s). While this method is called the customer system here, it should also be used to understand other players involved in the service system, such as suppliers and partner organizations.

R The next chapter contains additional information that is relevant for enriching the customer system, in particular the persona method.

3.2.4 Co-opetition

The *co-opetition* framework [13] considers five groups of market participants: The service provider itself, its suppliers, competitors or substitutors, complementors, and of course, customers. Drawing out this model for a given service provider helps understand explicit and implicit connections it has with both the organizations

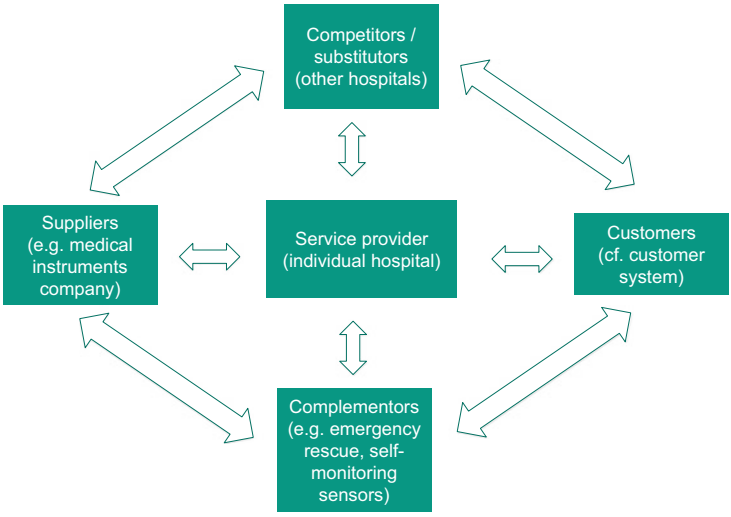

Fig. 3.8 Co-opetition framework for analyzing industries (based on Brandenburger and Nalebuff [13])

increasing (complementors) and decreasing (competitors) the value they deliver to their customer. While this appears relatively straightforward in some instances, particularly for identifying the customers and suppliers, other connections might not be as apparent. Applying this to the health care services case study, the goal is to analyze the connections of hospitals as service providers in the context of stroke patient care, as shown in Fig. 3.8.

The hospitals are depicted in the middle of the figure. If a person suffers from a stroke, they usually receive first treatment and transport to the hospital by emergency rescue services, consequently shown as a complementary service to the hospitals. For a relative, arguably, an alternative to calling emergency rescue would be to call a taxi to transport the patient to the hospital, or to even use one's own car. Thus, this could in turn be captured a substitute to the emergency rescue services.

Further connections suggested in the illustration can fall outside of the traditional medical landscape, and may consequently be less obvious. This is illustrated for example by considering the connection with self-monitoring sensors. Nowadays, many self-monitoring sensors and devices are readily available for consumers' use in stores, and with increasing interest in so-called quantified self communities, a growing number of people are tracking their vital signs and other health data on a regular basis. Having up-to-date information on one's vital signs, such as heartrate, blood pressure, and so forth, of course increases possibilities of proactive care and thus may reduce the number of acute strokes that have to be treated in hospitals. Accordingly, this industry is shown as a complementor to the hospital services. In turn, the use of self-monitoring sensors and devices is supported by a broad availability of smartphones, which help to record and visualize the data gathered

by the sensors. The other branches shown in the figure can be interpreted in an analogous manner.

Analyzing a service provider's complementors and substitutors in this way helps gain a broader view of the organization's connections within its industry, as well as across industries. This method highlights the importance of considering the ecosystem of the service being developed. If one neglects the perspective of service complements and complementors, the quality of the developed service might not matter after all, since it will likely not receive a lot of attention in the market. The success of Apple's iOS operating system for example is often attributed largely to the vast number of applications and services available for it—these are however not provided by Apple themselves but by their complementors. A natural next step for dealing with the identified substitutors would be the use of the value curve model discussed after this, to illuminate potential ways of differentiation from this competition. The insights obtained on complementors and their connections can be used for example in the creation and modification of the provider's business model through the business model canvas discussed at the end of this section.

3.2.5 Value Curve

With the insights collected through the application of the methods presented above, the innovation team can formulate a first rough value proposition for the new service they want to develop. In order to do so, it is important to benchmark the service innovation with existing offers. As described by Kim and Mauborgne [16] in their article on implementing a blue ocean strategy—a move into a market space with low competitive pressure and high margins—applying the *value curve* method helps identify strengths and weaknesses in competitors' value propositions. This effectively helps the team avoid undifferentiated imitation strategies, which will limit the success of the newly developed services.

In order to prepare for the development of a new value curve, one first has to identify the most relevant dimensions of a value proposition in the analyzed industry or marketplace. These are captured on the y-axis, as shown in Fig. 3.9. After that, through prior knowledge and additional research, value curves for selected industry incumbents are drawn—these are two of the value curves shown in this figure.

The remaining curve illustrates the value proposition for a hypothetical new stroke patient focused insurance. But how does the innovation team come up with the value curve for their novel service? Kim and Mauborgne [16] advise to investigate four options for change within the identified relevant dimensions:

Create Which factors should be created that the industry has never offered?
Eliminate Which of the factors that the industry takes for granted should be eliminated?
Raise Which factors should be raised well above the industry's standard?
Reduce Which factors should be reduced well below the industry's standard?

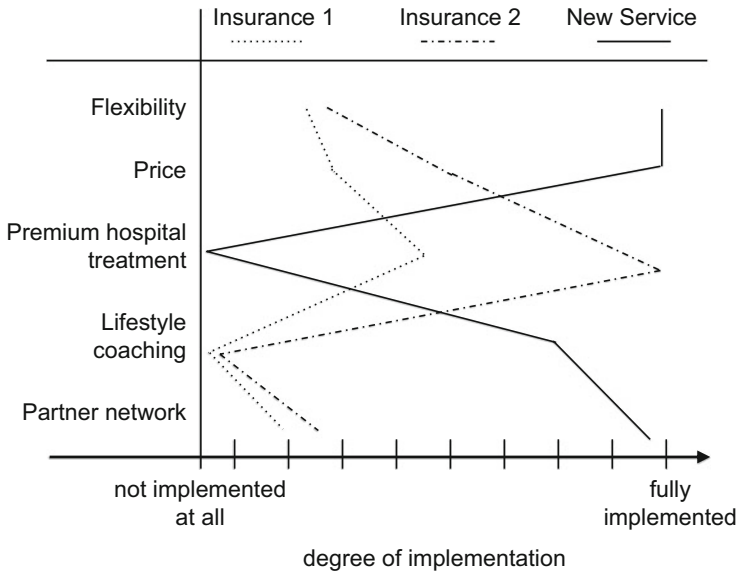

Fig. 3.9 Value curves for novel stroke care insurance

It is important to note the recommended order in thinking about the value proposition's fulfillment of the individual dimensions. Making incremental changes from incumbents' value curves will likely not produce a well differentiated and promising new service offering—it is about really finding a new need or market niche to target. On the other hand, dimensions that potential customers do not value as high as generally assumed in the industry can be treated with less priority without losing to much appeal in the customer's eyes. This also allows to stay competitive on pricing, since one will likely not be able to provide a better service in all relevant dimensions at a price level comparable to existing services.

In our example, the new insurance service focuses on the needs of stroke patients. An important aspect of that is flexibility, since the post-hospital phase of treatment is usually long and, thus, entails very different experiences for individual patients. Consequently, the fulfilment of this dimension is raised well above the competitors' standards.

There are two dimensions, which are not addressed at all in our example, namely lifestyle consulting and providing an extensive partner network between institutions, and with special deals for patients. These are implemented on a high level in the new service, in order to differentiate it from existing competitors. Consequently, the new service is positioned in the premium segment, as indicated by the dimension price.

In addition, previously held assumptions in the industry are challenged. The importance attributed to premium hospital treatment, such as having a room to oneself or being treated by a more senior physician is hypothesized to be comparably low to the considered stroke patients in comparison to the other value dimensions.

One possible reason behind this is that in emergency situations, a patient is always delivered to the nearest hospital with adequate infrastructure, and among these hospitals, processes and treatments are highly standardized. Consequently, this dimension is eliminated for the proposed new service.

Like the other methods, the value curve should be employed in an interactive fashion in order to advance the team's insights. In this sense, it is very important to challenge assumptions about the importance of individual dimensions, and to conduct some (field) research, if possible. In addition, the selected dimensions themselves should be questioned, and if necessary, modifications should be made in creating a desired value curve for the new service offering.

R For more information on this, please refer to the concept of personas and the customer journey in the next chapter on service design.

3.2.6 Business Model Canvas

The *business model canvas* [10] was introduced as one of recent academic attempts at capturing the most important aspects of a company's business model. In our context, it can be used to pull together the insights obtained through the application of the other methods presented. Filling out the categories of the canvas allows the innovation project team to make connections with existing resources, activities, competencies, and the customer base in the case of an established service firm.

In the case of a start-up company, this methods helps the project team identify areas, which will have to be developed and invested in. In both contexts, the business model canvas helps to analyze the interplay of the individual elements of a service and its value proposition. In addition, it provides a first glimpse at a potential business case, in the form of rough revenue and cost considerations.

An exemplary canvas is depicted in Fig. 3.10. In line with the performed analyses and obtained insights above, this case study's aim is to develop a service for stroke care and a corresponding business model. The three broad areas of the canvas, value creation, value delivery, and value capture, are discussed in turn below, with the value proposition connecting value creation and delivery.

Value Creation

Partner As highlighted in the application of the value curve method above, our new service is positioned as a premium service, and is intended to offer an attractive partner network to customers. Consequently, this includes for example interactions with other health insurance companies, specialized hospitals and doctors, but also specially trained lifestyle and nutrition coaches.

Activities In terms of activities, the new full service is specialized for stroke patients, and should address their needs from very early stages to sustainable care. This means that our service should offer for example dedicated emergency contact and rescue services to reduce potential response times. Other important

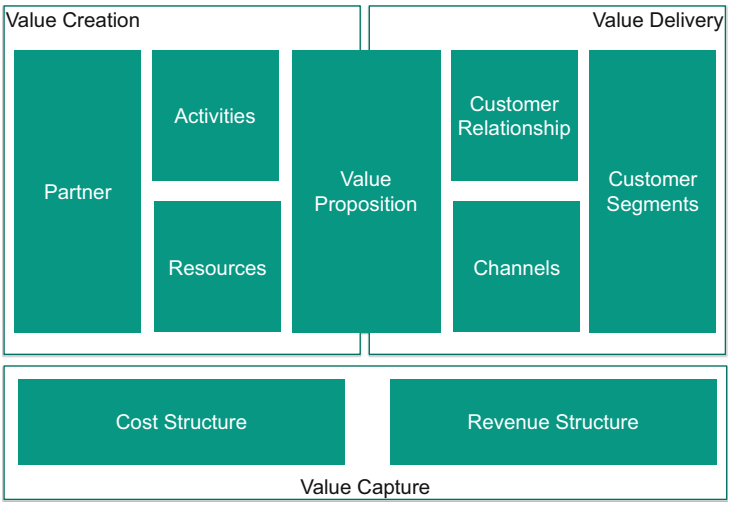

Fig. 3.10 Business model canvas (based on Osterwalder and Pigneur [10])

activities include offering coaching and access to support groups, as also indicated in the partner category above.

Resources Resources and competencies constitute an important basis for successfully providing a new service. Key resources required in our case could be trained hotline staff for the contact service described above, as well as personal advisors and corresponding office spaces to assist patients in adapting to changes and transitioning between individual phases of stroke care. It is important to note that a company does not need to provide all necessary resources and competencies on its own. In order to introduce a new service, it can integrate its offers with other providers and use for example outsourcing to create a service system.

Value Proposition

The new service's value proposition has already been identified using the value curve method above. It is positioned as a premium service, which specifically targets stroke patients and offers them a full service package. This clearly differentiates it from the more generic offers of other health insurance companies. In particular the integration with other specialized providers and the broad range of service elements provide a high value to the customer.

Value Delivery

Customer Segments It is somewhat difficult to define the potential customer segments for the discussed kind of new service. What is feasible, though, is analyzing the customer bases and segments of existing health insurance providers, and collecting this information here.

Customer Relation As the new offering is supposed to be a premium full service, the customer relation should ideally be very personal, and the customer should always have access to his personal advisor and coach.

Channels Channels for reaching and interacting with the customer in our example span different media. As discussed above, it is important for the customer to have maximum convenience in reaching our service provider and the associated service providers. Consequently, a combination of personal, telephone, email and other online channels could be used. Personal communication and physical advertisement could be done for example through partner hospitals and private practices.

Value Capture

Cost Structure The cost structure of such a complex service is difficult to anticipate. At this stage, the relevant cost categories should be captured to guide further research and detailing of the business model. Important cost categories will include emergency services and hospital bills, commissions for associated service providers and partners, hotline staff, infrastructure, marketing and advertisement.

Revenue Structure Revenues for the discussed kind of service will likely be based on a monthly or yearly payment scheme, since it would be difficult to determine a one-off fee for a service with such high delivery length and volatility. Optional premium services that customers can choose will provide additional revenues, also on a recurring, or on a one-time basis.

Of course, the presented methods can be supported by electronic tools, which facilitate their application in service innovation projects. For many methods, templates for their use are readily available, or can be created with relative ease. An interesting web resource to check out in this context is service design tools (http://www.servicedesigntools.org), an open collection of such tools. In particular for the business model canvas, since this is a commercially supported method, there is a whole ecosystem of tools available, from workshop support to electronic resources.

The importance of innovating in services is not restricted to *pure* service companies, however. In recent years, services have gained momentum in manufacturing and other industries, and are becoming integral parts of many companies' business models. Innovation in services is thus considered to be one of the core drivers for growth and competitive advantage in the future. This increasing investment in services and their development results in the *servitization of manufacturing* [17].

3.3 Servitization of Manufacturing

When asked to name pioneers in service innovation, people list names like Amazon, Facebook or Google. Such companies have a reputation for introducing cutting-edge services which frequently enthuse their customers. The need to innovate in services goes far beyond *pure* service companies, however. (Former) Manufacturing companies such as ABB, IBM, Rolls-Royce, Xerox, and others have (re-)discovered

the potential of services as well. Despite their focus on goods and technology, they have heavily expanded their service business; by providing solutions of integrated product and service offerings instead of selling products only.

ABB, a global player in the automation and power industry, offers a wide range of industrial services along the entire life cycle of its products: from installation, to maintenance, to end of life services and replacement. An example for an integrated product and service offering are ABB's *Maintenance Outsourcing Services*, where the company takes over the maintenance management for entire industrial plants in form of a full service solution [18]. Rolls-Royce, known for providing the airline engines for Boeing's 787 Dreamliner and Airbus' A380, offers a rich portfolio of integrated product service offers as well. Within their *Total Care Service* Rolls-Royce takes over the entire engine and maintenance management for civil aerospace clients. Airlines are charged based on the performance they receive, i.e., per flying hour of engine [19].

The strategy to offer integrated product service solutions has been pursued by a number of manufacturing companies worldwide. Many of them—for instance IBM, Rolls-Royce, and Xerox—generate more than 50 % of their total annual revenues with services [20–22].

3.3.1 Servitization

In literature, the trend to offer integrated product and service offerings—so called *product service systems (PSS)*—is summarized by the phrase *servitization of manufacturing*. The concept goes back to Sandra Vandermerwe and Juan Rada, who published an article on the *servitization of business* in the European Management Journal in 1988 [23]. Since then the concept has received increasing attention, both, in industry and from an academic point of view. Baines et al. [17] define servitization in the following way:

► **Definition (Servitization)** Servitization is the innovation of an organisations capabilities and processes to better create mutual value through a shift from selling product to selling product service systems.

The definition emphasizes three key aspects. First, servitization is about innovation. Moving into services requires the redesign of business models, the innovation of respective capabilities and processes with a focus on value creation. Second, servitization is about mutual value creation, i.e., it involves the cooperation and coordination among provider and customer to obtain a beneficial outcome for both of them. Third, servitization comes with the shift from selling products to providing integrated solutions of products and services. Baines et al. [24] define this concept in the following way:

► **Definition (Product Service Systems)** An integrated product and service offering that delivers value in use.

Reasons for manufacturing companies to servitize are manifold. Yet, most of them go back to two reasons: to the realization of financial benefits and to the establishment of closer relationships with customers.

In times of declining margins, low growth rates in mature markets, and an increasing commoditization of products, manufacturing companies are under pressure. Customers are highly price sensitive and in many cases product characteristics alone are not sufficient to successfully differentiate oneself from competition. In such an environment services offer additional sources for differentiation, thereby enabling providers to customize their offerings and to realize higher profits. Moving into the service business enables the development of entirely new business models allowing to enter into entirely new markets and to compete in existing ones. In contrast to products, services business models usually generate continuous cost and revenue streams. That is, cash flows from services are usually distributed over a period of time which smoothes the effect of economic cycles.

The second line of reasoning assumes that servitization allows manufacturing companies to establish closer relationships with customers. As the development of product service systems is about mutual value creation, servitization requires closer customer integration quasi per definition. Once a closer relationship is established, manufacturing companies can use the additional insights they gain to even further customize their offers which leads to a customer lock-in. One way to achieve this—and this point is frequently made in this context—is to service the installed base. Besides its additional revenue potential (in many industries, the total expenditures invested in the installed base is much greater than the sales of new assets per year), servicing the installed base allows equipment providers to gain a deeper knowledge of their customers' business, processes and needs.

R There is an ongoing debate among academics and practitioners whether or not the strategy of manufacturing companies to servitize pays off. While there are many positive examples, extending ones service business is not always the ultimate strategy to pursue. There is evidence that huge investments in the service business do not automatically imply that revenues and profits increase likewise. In literature, this phenomenon is called the service paradox [25].

R The trend towards extending the service business is not restricted to the manufacturing industry. Examples can be found in all kinds of industries in both, business-to-business and business-to-consumer markets. From an academic point of view, research on servitization shares many ideas with related fields. One example is research evolving around the paradigm of *service dominant logic* (see Chap. 1). It postulates a new dominant logic for marketing stating that services rather than goods are the fundamental basis of economic exchange [26].

3.3.2 Product Service Systems

Once a manufacturing company has decided to servitize the question remains how to move into the service business, i.e., how to integrate products and services. Depending on the industry, customer requirements, maturity of a company's service

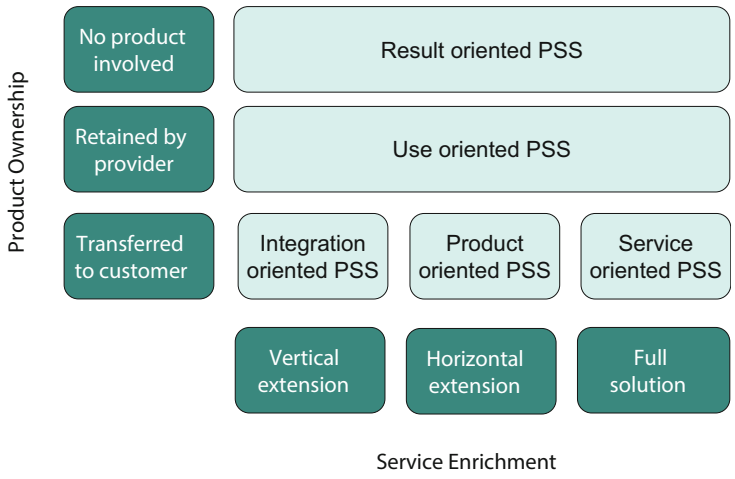

Fig. 3.11 Types of product service systems (based on Neely [28])

business, etc., companies may offer different types of product service systems (e.g., product oriented, use oriented, and result oriented PSS). In literature, various typologies to distinguish different types of product service systems have evolved (see e.g. Tukker, Neely, Meier et al. and van Ostaeyen et al. [27–30]).

For example, Neely [28] distinguishes five types of product service systems which are organized along two dimensions, product ownership and service enrichment (cf. Fig. 3.11). With regard to product ownership, the product might be transferred to the customer, retained by the provider, or there might no product be involved at all. Service enrichment may happen vertically (i.e., companies go down- or upstream), horizontally or in form of full solutions.

Integration Oriented Product Service Systems

Companies that offer integration oriented PSS seek to go downstream, i.e., they aim to move into retail and distribution, transport, financial services, consulting, etc. The physical product builds the core offering and is transferred to the customer. It is enriched with services from the vertical supply- and distribution chain.

Integration oriented product service systems can for instance be found in the automotive industry. Car manufacturers do not only produce cars, they increasingly move into retail services themselves, thereby bypassing independent car dealers.

Product Oriented Product Service Systems

Product oriented PSS are very similar to integration oriented product service systems. Product ownership is still with the customer. However, in contrast to integration oriented product service systems, the service offered is directly related to the product. That is, services relate to the product life cycle and may comprise activities such as design and development, installation, maintenance support, replacement, etc.

An example for product oriented PSS may be found in the service portfolio of ABB. The company offers a wide range of services along the entire life cycle of its assets, from installation, to maintenance and repairs, to advanced services such as asset optimization and software as a service, to end of life services and replacement [31].

Service Oriented Product Service Systems

Service oriented PSS incorporate services directly into the product. In contrast to integration and product oriented PSS (product plus service), services build an integral part of the offering (product service bundle). Similar to the first two types of PSS, ownership of the product is transferred to the customer.

An example for such a service is BMW's Intelligent Emergency Call service [32]. In case of an accident the system automatically sets off an emergency call connecting the passenger to a trained personnel who will take further action (e.g., call emergency services, transmit current position, etc.). In this example, the service (the ability to automatically set off an emergency call) is directly integrated into the product, i.e., the car.

Use Oriented Product Service Systems

Use oriented PSS focus on the provision of the functionality that is contained in a product. Instead of purchasing a product that provides a particular functionality, the utilization of this functionality is sold as a service. Use oriented product service systems can typically be found in the context of leasing or outsourcing, in sharing or pooling. The product used to provide the functionality is owned by the service provider and does not pass on to the service customer.

One company that provides use oriented PSS is Xerox. The company's focus is no longer on selling printers. Instead, Xerox has introduced leasing contracts for their printers and even offers full managed printing services. Thereby, customers can purchase the actual functionality—the printing of documents—only, without having to invest in the actual product, the printer [22].

Result Oriented Product Service Systems

Result oriented product service systems constitute the most service centric product service system. In this case, the product is entirely replaced by a service, i.e., there is no product ownership any longer.[1]

A typical example, as stated by Neely [28], is the replacement of answering machines by voice mail services. In this case, the functionality of the tangible

[1]This does not mean that there are no physical resources involved in providing a service. The difference to other PSS types is rather that the customer does not buy a product but a certain result or capability which was prior delivered through a product. The way in which these results or capabilities are achieved is not specified any more. Instead, the provider is free in choosing how the predefined results or capabilities are to be achieved.

product is entirely replaced by the service which leads to the result that there is no need for individuals to own an answering machine and thus a physical product any longer.

To distinguish clearly between the different types of product service systems is not always possible. Instead, a value proposition for a customer may consist of various types of product service systems. Take BMW's Intelligent Emergency Call service as an example: though the service itself may be a service oriented PSS, the car may be leased or be part of BMW's mobility service DriveNow (use oriented). In this case, the overall value proposition for a customer is realized by a combination of various types of product service systems.

3.4 Conclusions

The transition of manufacturing companies towards integrated solution providers is far from trivial and there are various challenges and managerial implications to address. Entering into the service business requires a change of mindset, closer integration of customers and the establishment of long term relationships to name just some requirements [23, 28].

Manufacturing companies need to change their mindsets in order to develop a service culture that focuses on customers and their needs instead of discrete features of products. Providing integrated product service solutions requires providers to understand how value is created for and perceived by their customers. To achieve this, companies need to rethink their traditional, transactional way of doing business and need to move to a relational marketing approach that focuses on the establishment of long-term relationships. If such a strategy coincides with an increasing engagement in long-term contracts, long-term risks and uncertainties have to be modeled, understood and managed.

The establishment of a service culture and the shift towards relational marketing inevitably comes with a closer customer integration. As service is all about co-creation of value, solution providers and their customers need to collaborate in the design, provision and utilization of product service systems. To achieve an effective coordination among involved stakeholders, information, people, technology as well as other internal and external service systems have to be managed accordingly. Manufacturing companies need to cope with the increasing complexity that results from this integration. Only if all involved parties have a mutual understanding of how value is created, can beneficial outcomes for both parties be achieved.

What is still unclear is how readily learnings from pure service organizations can be applied to manufacturing companies that are transforming into servitized organizations. Many issues are yet to be researched further, such as promising capability constellations for supporting service innovation, and managing the trade-off between exploitation in existing business and the exploration of new business opportunities [33]. In service firms, this has often been a challenge affecting every level of corporate hierarchy, rather than being solved centrally through a dedicated research and development department in industrial companies. Understanding the

capabilities that these different organizational modes require further, and transferring learnings on service innovation management, could play a key role in the success of companies' servitization initiatives.

Review Section

Review Questions

1. What is the definition of innovation that was used in this chapter?
2. What are the four basic types of innovation according to Henderson and Clark? Name the two dimensions along which they are distinguished, draw the resulting framework and give an example for each category.
3. What are the three approaches to studying innovation in services and how do they relate to existing knowledge in the manufacturing innovation domain?
4. What are the essential elements and steps in applying the Janus Cones method? Please apply the method to a service topic not presented in this book and record your results.
5. Which method presented in this chapter is most suitable for analyzing the current and potential stakeholders of a service system? What value can you derive from applying it to your innovation challenge? Please compare the services offered by a budget airline, such as Ryanair, and those offered by a full-service provider, such as Emirates, using the value curve method.
6. Using the customer system method, please analyze the involved parties in the following situation: A start-up is considering to offer a novel service that allows college students to mentor highschool students in order to give them profound insights into their colleges of interest before they start with their studies.
7. Which types of product service systems are there? Find an example from practice for each type of product service system defined.
8. What are the challenges posed by servitization and how could each of them be addressed?

Project

This chapter has briefly touched on the concept of Massive Open Online Courses (MOOCs) as instruments in online teaching. A comprehensive overview of courses offered, as well as further information can for example be found at https://www.mooc-list.com.

Imagine your university wants to create its own MOOC format and maybe even delivery platform. The key question, of course, is how to make the new service stand out from the large number of already established MOOCs in the market. This entails the consideration of the customers', as well as the teachers' perspective at your university.

The following questions should be answered in your report:

- What characterizes the existing MOOC landscape and offerings? What unique advantages and shortcomings do they have? You may use for example the value curve and the business model canvas method to perform this analysis.
- In designing a novel MOOC service, what are the key dimensions your university has to address? A suitable method to tackle this question is the context map.
- Who are the stakholders you have to address in the creation and delivery of the service? What are their individual requirements and motivations? You can use the customer system method to answer this point.
- How can you ensure that the newly created service is not only more attractive to students than existing MOOCs, but potentially more attractive than traditional classroom teaching? How is your university going to implement the service? You can build on your previous value curve and business model canvas analysis to answer this question.

In writing your report, please provide the visual application of the introduced methods, as well as corresponding explanatory text. Furthermore, your report should of course follow standard academic practices and present references for material and information that you have retrieved and used in your work.

Key Terms

Innovation Innovation is the introduction of a novelty to a market.

Service Innovation The creation of a new market offering in the form of a service.

Types of Innovation Different types of innovation can be differentiated. One popular categorization was developed by Henderson and Clark, based on the dimensions change in key concepts and change in linkages between these concepts.

Service Innovation Methods There are a number of specific methods that can be employed in service innovation projects. The methods presented here focus on the early phases of such projects.

Innovation Process Innovation processes are simplified models for describing the individual phases that an innovation project usually goes through. They can also be used in a prescriptive way, when a company designs their own innovation process and has projects follow it.

Business Model Canvas The Business Model Canvas is a relatively recent and comprehensive tool for describing a business model for an existing company, for a new offering, or for a start-up.

Product Service System An integrated product and service offering that delivers a certain value in use to the customers.

Servitization The transformation of industrial companies from selling products to selling product service systems.

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