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A Value Development Framework For Service Innovation

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A VALUE DEVELOPMENT FRAMEWORK FOR SERVICE INNOVATION

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*To my parents, Ah-Kim and Ah-Hoye,
for their love and support.*

*Nobody owes anybody a living, but
everybody is entitled to a chance.*

— Jack Dempsey

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INTRODUCTION

This chapter lays the foundation for this thesis. First, the problem that this thesis seeks to address is presented and the current research gaps in the field of service innovation are outlined. Then, the aims and objectives of the thesis are discussed. Finally, the research method used as well as the structure of this thesis document are described.

1.1 PROBLEM DEFINITION AND RESEARCH GAPS

It is an undeniable fact nowadays that services have become a vital catalyst for economic growth worldwide. From fast-growing nations including China and India to the world's most developed countries, such as the United States, the United Kingdom, France, and Germany, the service sector in all these countries can contribute to more than half of their gross domestic product (GDP). In fact, the GDP of the Organisation for Economic Cooperation and Development (OECD) nations from services is close to seventy percent [68]. Spending in the service sector has also become more prominent worldwide. Even less developed countries in Africa are gradually experiencing a sharp rise in service spending of more than fifty percent of their GDP in several domains such as education, health, telecommunications, and tourism [13].

The rise of services has also contributed to an exodus of employees from the manufacturing to the service sector. In Norway, for instance, the service industry has witnessed a rise of nearly one hundred and sixty percent in the number of service personnel over the past twenty-five years [1].

Service innovation is regarded as being a key pillar in order to sustain the growth momentum of the service sector. A report in as early as 1996 highlighted the importance of service innovation in modern service societies [32]. Despite considerable research efforts to understand and support innovation in services, organisations still face many difficulties in offering new service offerings to their customers [6]. Chesbrough [9] argues that such difficulties cannot simply be tackled using methods applied for product innovation since services are inherently dissimilar to products based on the former's IHIP characteristics (see section 3.1). This problem is comprehensively highlighted through the Service Dominant Logic (SDL) [65] which lists ten foundational premises containing concepts and principles that illustrate even more the differences between services and products. As such, Miles [46] argues that innovation in services should not only focus on the output, as is the case with

a product innovation process, but rather cater for the intangible aspects of services in the way that they are designed, produced, and consumed through a service development process.

In order to better understand the service aspects which can have an impact on service innovation, researchers and practitioners have been exploring three basic service innovation research streams, namely the survey and case study literature, New Service Development (NSD), and Service Design [46] – refer to section 2.1 for more information. While these research efforts are continuously reshaping the service innovation landscape in positive ways, a major problem identified through a review of the literature concerns the lack of a service innovation framework that puts emphasis on the development of customer value or value being proposed by a service to its customers. As a matter of fact, the creation of new or improved customer value is an essential goal of service innovation and is well recognised as being the next source of competitive advantage for service organisations [10, 69]. This value that customers perceive and create through their service usage is linked to the set of individual benefits that a service proposes to its users [2, 34, 54, 62].

Therefore, a framework to develop new or improved customer benefits can potentially fulfil the goal of service innovation and have a positive impact on organisations and their customers. The need for such a value development framework is put forward according to the following research gaps:

1. A review of the service innovation literature indicates an absence of such a value development framework to create new or improved customer value at the level of the individual benefits for customers. This state of affairs can be confirmed based on an extensive review of the service innovation literature performed by Droege et al. [19].
2. Even in the field of Service Design, which is primarily concerned with the provision of value, customer value seems to be a concept that is dealt with implicitly by service designers as a natural outcome of a service design activity [66]. Consequently, service design techniques and tools [60], such as the service blueprint and the customer journey map, do not feature value as customer benefits that need to be managed and improved as part of a service development process.
3. Popular service innovation methodologies based on a service marketing perspective, such as the outcome-driven innovation [6] and the FORTH methodology [64], concentrate their efforts only on the initial *ideation* phase of a service innovation process whereby new service ideas are produced. As a result, these do not take into consideration the potential for innovation during the development of a service throughout its various phases of conception, production, consumption and feedback (see section 3.4).
4. The current status of Service Science mandates the creation of such a value development framework containing the necessary procedures, methods, and tools for the creation of new innovative services [18].

1.2 PURPOSE OF THIS THESIS

This thesis seeks to address the problems identified in the previous section by proposing the development and implementation of a value development framework for service innovation known as the Service Model Innovation Framework or ServiceMIF.

The *hypothesis* of this thesis is that service innovation can be achieved through a value development framework that meets the identified needs and requirements for the creation of new or improved customer benefits or value for customers during the development of a service and, thus, close the gaps in service innovation research as discussed in the previous section.

ServiceMIF or this value development framework for service innovation aims to propose:

- A. an approach known as DISSECT to develop and improve the value in terms of the individual benefits being offered by a service to its customers as a means to better *understand, evaluate, and promote* opportunities for service innovation.
- B. a modelling language that enables the creation of service models to support the modelling requirements of the DISSECT approach.
- C. a tool that allows the creation and manipulation of service models for supporting the DISSECT value development approach.

The work on ServiceMIF follows the publication of a research paper about the Service Modelling Language (ServiceML) [3] which represents the initial research carried out during the course of this thesis. Furthermore, at the time of writing, another research paper based on the work discussed in this thesis has been submitted to a research conference for review and acceptance [43]. Both research works have been carried out at SINTEF¹ under the Center for Service (CSI) innovation initiative² for contributing to the CSI's second research theme, *co-creation and open innovation process*³, with a focus on the work package five, namely *open and co-creating service innovation platforms*.⁴

1.3 RESEARCH OBJECTIVES

A number of research objectives have been formulated for this thesis as part of the elaboration of ServiceMIF as discussed below.

The field of service innovation is broad and is constantly being updated by an active community of researchers and industry practitioners. The first task to be performed involves gaining a conceptual understanding of the main research concepts within the service innovation domain and the identification of service innovation objectives which ServiceMIF will focus on.

¹ SINTEF ICT website:

<http://www.sintef.no/home/Information-and-Communication-Technology-ICT/>

² Center for Service Innovation (CSI) website: <http://csi.nhh.no/>

³ CSI's second research theme:

<http://csi.nhh.no/research/co-creation-and-open-innovation-process/>

⁴ CSI's WP5: <http://csi.nhh.no/research/co-creation-and-open-innovation-process/wp5/>

Since service innovation requires innovating a 'service', it is consequently important to acquire a comprehension of the key service aspects including service quality, service experience, and the service development life cycle that can have an impact on the success of a service innovation process. The second research objective aims to do that.

Another key service aspect deals with customer value in terms of the benefits for customers which is the focus of the DISSECT approach. Consequently, an analysis of the central ideas and principles surrounding the value concept forms part of the discussion for the third research objective.

The fourth research objective is concerned with a review and assessment of the main approaches, techniques, and tools that are relevant for carrying out service innovation.

Based on the conceptual framework established from the previous four research objectives, the fifth research objective addresses the identification of requirements for achieving service innovation based on the creation of new or improved customer benefits during the development of a service.

The sixth research objective is concerned with the elaboration of a value development framework consisting of a methodology approach along with its supporting service models to meet all the *service innovation requirements* identified for the fifth research objective. This value development framework is called ServiceMIF with the methodology approach known as DISSECT.

The last research objective is concerned with the validation of the stated hypothesis in section 1.2 through an experiment designed to evaluate the service innovation capabilities of the value development framework using its methodology approach and supporting service models based on the set of identified service innovation requirements.

Summarising the previous points, the research objectives for this thesis consist of the following:

- A. Understanding the main research concepts within the field of service innovation and identifying service innovation objectives.
- B. Comprehending the important service aspects that can impact service innovation.
- C. Analysing the concept of customer value in terms of the benefits for customers from a service innovation perspective.
- D. Reviewing and assessing the main approaches, techniques, and tools for service innovation.
- E. Identifying a list of service innovation requirements for achieving service innovation based on the creation of new or improved customer benefits during the development of a service.
- F. Developing and implementing a value development framework that consists of a methodology approach as well as its supporting service models to meet the identified service innovation requirements. The value development framework and its methodology approach will be called ServiceMIF and DISSECT respectively.

- G. Conducting an experiment in order to evaluate the service innovation capabilities of the value development framework using its value development approach and supporting service models based on the set of identified service innovation requirements and, hence, to validate the hypothesis stated in section 1.2.

1.4 RESEARCH METHOD

The development and elaboration of ServiceMIF follows a research method that is based on the method for *technology research* [58]. Based on the latter, the following steps have been undertaken during the course of this thesis:

PROBLEM ANALYSIS The problem explained in this thesis is that of service innovation and the lack of proper methodologies, techniques, and tools for the creation of innovative services. The need for a service innovation framework has been highlighted as part of the objectives of the Center for Service Innovation in Norway through the concerted efforts of all its research partners including SINTEF. A list of *requirements* for the service innovation framework will be identified based on the research that will be carried out.

INNOVATION The artefact that is going to be developed is that of a value development framework that contains an approach, a domain specific modelling language, and a model editor tool for the development and improvement of customer value. The value development framework, known as ServiceMIF, seeks to address the gaps in service innovation research, as discussed in section 1.1, and, hence, validate the hypothesis stated in section 1.2. ServiceMIF will be developed and implemented based on the set of requirements identified in the background research study phase.

EVALUATION After the development and implementation of ServiceMIF has been completed, an experiment is going to be performed so as to evaluate whether the value development framework meets the set of service innovation requirements. If the results of the experiment are able to satisfy these requirements, it will then be concluded that the value development framework has fulfilled its service innovation objectives, validated the hypothesis of this thesis, and closed the research gaps in service innovation research as identified in section 1.1.

1.5 THESIS STRUCTURE

The structure of this thesis document is comprised of four parts which are broken down into twelve chapters.

1.5.1 *Part I: Background Study*

Part I (chapters two to five) is concerned with the background research for the conceptual framework of this thesis. Chapter 2 addresses the main research concepts within the service innovation field and the identification of service innovation objectives for ServiceMIF. Chapter 3 discusses the key service aspects that can impact the success of a service innovation process. Chapter 4 describes the customer value concept and its implications in terms of the benefits for customers from a service innovation perspective. Chapter 5 is concerned with the identification of requirements for the development of a service innovation approach. In addition, this chapter presents an assessment of the approaches, techniques, and tools for service innovation.

1.5.2 *Part II: ServiceMIF*

The second part of this thesis document (chapters six to eight) describes the development of ServiceMIF. Chapter 6 outlines the architecture of ServiceMIF and describes one of its components: the value benefit template. In chapter 7, the other two components, namely the DISSECT approach and the service models, are illustrated based on their principles, methodologies, the metamodels of the service models, and the service model editors. Chapter 8 discusses the implementation of the ServiceMIF model editors including the choice of the development platform and a basic tool walk-through.

1.5.3 *Part III: Results and Evaluation*

The third part of this thesis document (chapters nine to ten) presents the results of the experiment carried out to evaluate ServiceMIF and discusses the findings made. Chapter 9 describes the experiment based on a case study of an event booking service called *Concierge*. The results of the experiment are reported and its findings as well as the evaluation of ServiceMIF are addressed. Chapter 10 concludes the thesis by providing a summary of the thesis and discusses its contributions to the field of service innovation. A section on future work explains the potential avenues for further research.

1.5.4 *Part IV: Appendix*

The last part of this thesis document contains appendix A, where example code for the implementation of the ServiceMIF graphical editors is illustrated, and appendix B which contains the set of value benefits articulated during the course of the ServiceMIF experiment.

I

BACKGROUND STUDY

SERVICE INNOVATION

This chapter addresses the first research objective which is concerned with an understanding of the research field related to service innovation. Various aspects of service innovation are presented including an overview of current research, types of service innovation, and the process of creating new services. Moreover, the objectives of a service innovation process are discussed.

2.1 OVERVIEW OF CURRENT RESEARCH

An extensive review of the service innovation literature performed by Droege et al. [19] reveals that the present schools of thought on service innovation can be classified into several types of studies: conceptual, interview-based, survey-based, and case study-based. According to Miles [46], these types of studies can be grouped into three main research streams:

- Survey and case study literature (i.e., comprising of interview-based, survey-based, and case study-based types of studies.)
- New Service Development (NSD)
- Service Design

2.1.1 *Survey and Case Study Literature*

The *survey and case study literature* primarily depends on surveys and case studies that are conducted to recognise patterns of innovation at both the internal and external levels of a firm. For example, the European Community Innovation Surveys (CIS)¹ are conducted with European firms involved in several service sectors (such as communications and transport) to determine whether these organisations have introduced product (including service) or process innovations (see subsection 2.3.1) during the last three years.

2.1.2 *New Service Development (NSD)*

The field of *New Service Development* is focused on various research domains aimed at understanding how to carry out service innovation during the time

¹ European CIS webpage:
<http://epp.eurostat.ec.europa.eu/portal/page/portal/microdata/cis>

a service is newly developed. For example, researchers have been working on identifying the objectives of a service innovation process and den Hertog [16] advocates four service innovation dimensions as explained in section 2.4. Other researchers are looking at the service aspects (see chapter 3) which can influence the success of a service innovation process. For instance, Johnes & Storey [38] associates New Service Development with three groups of service stakeholders including NSD staff responsible for service development; front-facing staff involved in interacting with customers; and the latter as consumers of the service. Furthermore, the role of service quality and the process of developing services have been found to have a positive effect on the success of New Service Development [21].

As mentioned before, NSD research is rather broad and looks at various domains, such as service design, service marketing, and business modelling, which altogether can contribute towards the creation of new services. For instance, the service design field has seen a rise in the number of techniques and tools to assist service developers during service development. The service marketing field, for its part, has witnessed a number of service innovation approaches, such as the FORTH innovation method [64] and the *outcome-driven* innovation process [6], which focus on the initial generation of service ideas (also known as *ideation*) during the service conception phase. The business modelling community also forms part of NSD research and concentrates on new ways to support the creation of innovative services. An example of one such business modelling tool is the Business Model Canvas [51].

2.1.3 Service Design

The third service innovation stream concerns the field of service design which is associated with NSD research. Service design dates back to the 1990s and has roots in industrial design.² Using a human-centered approach, service designers make use of several design techniques and tools to discover the needs of customers and opportunities to innovate [60]. Such techniques and tools include *personas* for describing typical service users, *customer journey maps* for illustrating the service journeys of users, and *service blueprints* for depicting the service processes required to enable and support the interactions and activities being performed by customers.

Although there are many “standalone” techniques and tools for service design, very few integrated approaches do actually exist for the development of a service from service conception to consumption. As a matter of fact, no such approaches were found on the service design tools’ website³ which contains a comprehensive list of service design techniques and tools. The only available service design approaches that were found include the AT-ONE methodology, the service design toolkit, and the Service Modelling Language (ServiceML) [3]. An online-based tool, known as *Smapply*, is also available for the development of services using personas, stakeholder maps, and customer

² The Service Design Network website: <http://www.service-design-network.org>

³ Service design tools website: <http://www.servicedesigntools.org/>

journey maps. A selection of such techniques and tools will be assessed in section 5.4.

2.2 DEFINITION

Service innovation is the subject of constant research in the service literature and, as such, many definitions of service innovation exist. van Ark et al. [63] proposed one such definition by stating that service innovation is about creating a new or considerably changed service concept, client interaction channel, service delivery system or technological concept. These four factors actually form part of den Hertog's [16] service innovation dimensions which are discussed in section 2.4.

A more general definition is given in the IfM and IBM white paper [36] which was created by leading researchers and industry practitioners for the conceptual understanding of service innovation in Service Science. Service innovation is then defined as a combination of technology, business model, organisational, and demand innovation designed to:

- create new service systems (radical innovation) and
- improve existing service systems (incremental innovation).

Radical innovation and incremental innovation are both discussed in the next section. Note that a *service system* is a general term that essentially covers the four service innovation factors identified by den Hertog [16].

2.3 TAXONOMY OF INNOVATION TYPES

This section provides an overview of the taxonomy of the various terms used to describe the types of service innovation based on the latter's goals and degree of novelty.

2.3.1 *Based on the Innovation Goals*

According to Miles [46] and the OECD's Oslo Manual [47], the innovation goals of a service innovation process are based on the following:

PRODUCT INNOVATION Refers to the development and introduction on the market of products or services that are either new or improvement of existing ones.

PROCESS INNOVATION Refers to the process that is used to create new or improved products or services which may imply changes in the manufacturing process or the service delivery mechanisms such as the tasks employees have to perform to deliver value to service customers.

Although these two service innovation types seem to be different, they are hard to readily differentiate in practice [46]. For example, the field of New Service Development considers both types of innovation important for the

development of innovative services. Consequently, innovating the outcome of a service requires also innovating the process used to deliver the outcome.

2.3.2 *Based on the Degree of Novelty*

Service innovation can also be classified according to the degree of novelty of the innovation outcome. Gallouj & Weinstein [27] and Sundbo & Gallouj [61] identified six service innovation types, namely radical, improvement, incremental, ad hoc, recombinative, and formalization – with the first two from the list being the most common forms of service innovation:

RADICAL INNOVATION Radical innovation help create new services that are known for disrupting the market both for organisations and their customers (also regarded as breakthroughs).

INCREMENTAL INNOVATION Refers to changing a system by adding new service aspects incrementally based on customers' needs [14].

Although radical innovation can be perceived as being more important to achieving service innovation, incremental innovation is recognised as being equally important for the creation of improved value that can respond in a dynamic manner to the changing needs of customers [5, 14, 17].

2.4 SERVICE INNOVATION OBJECTIVES

In this section, the objectives of a service innovation process are examined based on den Hertog's [16] technological and non-technological dimensions for service innovation which have similar implications outlined in the IfM and IBM white paper [36]. Furthermore, these service innovation objectives are also represented in Gallouj & Weinstein's [27] innovation framework.

There are four dimensions as defined in den Hertog's service innovation dimension model. An adapted version of the latter with implications for the objectives of a service innovation process is shown in Figure 1.

These four dimensions form the conceptual basis to describe and analyse the objectives of a service innovation process:

SERVICE CONCEPT Refers to a new physical or virtual (online) service that is proposed to customers. For example, an online music service may propose a new video streaming service to its users. The service concept tries to capture the specific aspects of a service which make it different to a product due to its IHIP characteristics. The service concept and a service's IHIP characteristics are discussed in section 3.1. Innovating the service concept is concerned with the *provision of new or improved value or customer benefits* [20, 21]. A discussion regarding value can be found in chapter 4.

CLIENT INTERFACE Addresses the opportunities to innovate during the 'co-design' process (i.e., designing the service and value together with

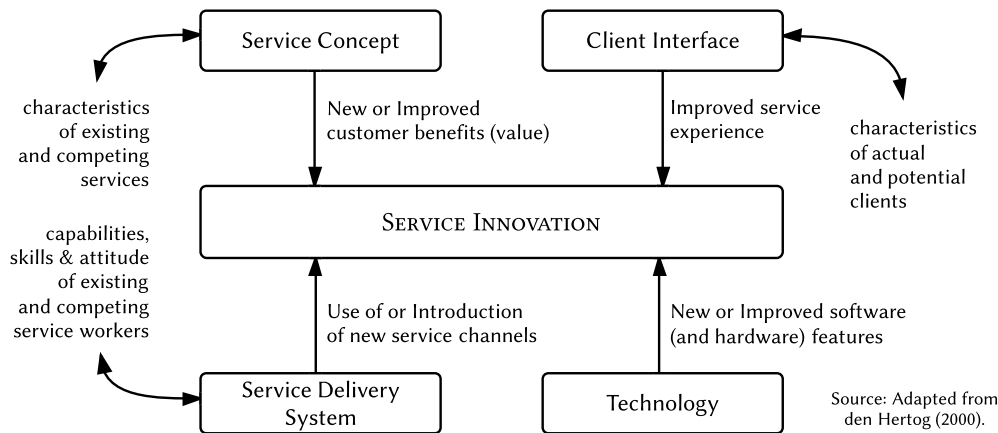


Figure 1: Four dimensional model for Service Innovation

customers and other service stakeholders such as *network partners*). The involvement of customers during a service innovation process (see subsection 2.5.1) through the client interface is conceptually similar to the idea of ‘co-production’ or ‘servuction’ [42] which is a fusion of the words ‘service’ and ‘production’. In the servuction model, the co-design and co-production of a service aims to improve the service experience of the service concept as perceived by customers. Hence, innovating the client interface is equivalent to *improving customers’ service experience*.

SERVICE DELIVERY SYSTEM Reflects on how a service is being delivered to customers by considering the set of activities performed by a provider’s employees to support the delivery of a service. Innovating the service delivery refers to the *use of new service channels* in an existing service or the *introduction of new service channels* to create new services for radical innovation [8]. A *service channel* defines either a physical or virtual medium through which customers access a service such as through a website, a mobile phone, or at a company’s office.

TECHNOLOGY Concerns the use of Information Technology to innovate both the process and outcome of service innovation. The implication of IT for service innovation is becoming more and more evident with the fact that IT is so pervasive in numerous information processing tasks. Consequently, service customers are particularly looking for *new or improved software features* that may require upgraded hardware tools that can enhance their service experience. The use of IT can also help in the creation of new service channels, described as part of the service delivery dimension previously, especially for online-based services [8].

Based on den Hertog’s service innovation dimensions and the innovation requirements of the IfM/IBM white paper, the objectives of a service innovation process can be summarized into the following points:

- A. *Service Concept Innovation*: Creation of new or improved value (i.e., set of benefits) for customers (including value propositions).

- B. *Client Interface Innovation*: Improvement of customers' service experience.
- C. *Service Delivery Innovation*: Use of or introduction of new or improved service channels.
- D. *Technology Innovation*: Creation of new or improved service software features.

2.5 THE SERVICE INNOVATION PROCESS

The process of service innovation is at an immature stage with organisations relying mainly on informal and tailor-made solutions [40]. One such solution can be represented based on the service innovation process shown in Figure 2 which is a simplified version of the stage-gate⁴ innovation process developed originally for product innovation.

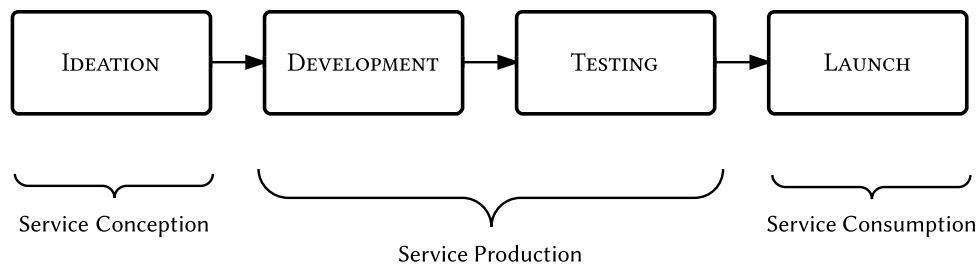


Figure 2: Service Innovation Process (Based on Stage-Gate)

As shown in Figure 2, the process of service innovation follows the development of a service from conception to production and consumption. The initial *ideation* phase involves the brainstorming of new ideas and concepts for the creation of new service or value offerings. The next phase deals with the *development* and production of these ideas into the actual service concepts before they are *tested* by target users. The service can then finally be *launched* to the general public.

de Jong et al. [15] characterises the service innovation process as a trial and error one. For example, the ideation phase is often associated with the “fuzzy front end” of innovation whereby new service ideas seem to be generated randomly without making use of a predefined pattern. Nevertheless, a service innovation process adheres to a basic set of characteristics which are described below:

- A. Discovering the needs of customers through their involvement and that of other service stakeholders.
- B. Identifying opportunities to innovate.

⁴ The Stage-Gate Innovation Process' website:
http://www.stage-gate.com/resources_stage-gate_full.php

2.5.1 *Discovery of Customer Needs*

The importance of discovering customer needs by involving customers and other service stakeholders during the service innovation process has been stressed in the literature.

Based on NSD research, Johnes & Storey [38] claims that customers' insights and cooperation are critical in successfully discovering customer needs. In addition, the quality of ideas and proposals for the fulfilment of customer needs seem to be improved if customers are involved in the co-development process of a service. Matthing et al. [45] discovered that with direct customer participation, a new service development process resulted in more successful innovation projects. Magnusson [44] also concluded that the outcomes of a service innovation process are "more original and valuable proposals" for innovative service offerings with customers than with professional developers. Additionally, service employees can have a strong impact in the innovation process since they tend to have a good understanding of customers' needs which may be due to their "proximity and frequent interactions with service customers" [50].

The involvement of customers to discover their latent or unmet needs and their emotional feelings towards a product or service, called *empathy*, is also highly emphasised within the service design community [60]. Methods and tools which allow customers to voice out their concerns, exchange ideas, share experiences, and so on include open innovation techniques such as crowd sourcing and gamification, and voice-of-customer techniques such as ethnography and focus groups.

2.5.2 *Identification of Innovation Opportunities*

Identifying opportunities for innovation marks an important function for a service innovation process. For example, the FORTH innovation method [64], which is based on the stage-gate innovation process, advocates an 'Observe and Learn' stage whereby relevant insights and promising opportunities for innovation have to be identified from various sources including customer insights, target groups, sources of inspiration, and trends and technology.

Bettencourt [6] also emphasises the need to "discover opportunities" for service innovation during the innovation process.

In the field of service design, techniques and tools are also used to identify opportunities for improvement. For example, a service blueprint [60] is used to describe service processes and identify improvement opportunities both in terms of value offerings and the service delivery [25]. As a result, the service innovation objectives outlined in section 2.4 can essentially be satisfied through the identification of opportunities for innovation.

3

KEY SERVICE ASPECTS

This chapter addresses the second research objective which is dedicated to a comprehension of the key service aspects that can impact the success of a service innovation process. The first section deals with the service concept. The chapter then proceeds with discussions regarding service quality and service experience. The last section covers the service development life cycle.

3.1 THE SERVICE CONCEPT

The definition of a service is often attributed based on its differences to a product which are known as the IHIP characteristics [70]:

- **Inseparability:** Refers to a dynamic service production process whereby a service offering is produced at the time of consumption. For example, a customer support unit only provides its services when a customer initiates a telephonic conversation with it.
- **Heterogeneity:** A service proposes unique benefits to customers which are not mass produced as is the case with a product.
- **Intangibility:** A service cannot be felt through one's senses. For example, an online music service cannot be touched nor tasted unlike a product.
- **Perishability:** A service once produced cannot be returned nor resold unlike a product.

Although differences exist between services and products, services often come packaged with products nowadays. For instance, a company offers an after-sales service for the maintenance of products bought by customers.

Services are also inherently either *human-based* (e.g., a bus transport service or a health care service) or *online-based* (e.g., a music streaming service or a gaming service) or a combination of both such as a bank which offers customers the ability to conduct banking transactions at the bank's premises or online through its website.

Based on these different factors, the notion of a *service concept* has been developed in order to give meaning to a 'service'. A service concept features multiple descriptions. It consists of service offerings destined to provide value or the set of benefits for customers [29]. It also specifies service aspects such as customer needs, the *servicescape* (i.e., the physical environment in which a

service encounter takes place), the service quality, the service delivery, and the service experience [39]. Moreover, a service concept acts as a tool for various service stakeholders to communicate and express their ideas and thoughts about the service [26].

From a service innovation viewpoint, the focus is on innovating the service concept based on the service innovation objectives described in section 2.4.

3.2 SERVICE QUALITY

The successful creation of innovative services depends on how well customers perceive the quality of the services being offered. According to Grönroos [31], the quality of a service consists of an evaluation of customers' service expectations with the actual perceived experience in terms of:

TECHNICAL (OR OUTCOME) Refers to “what” a service is providing based on one or more outcomes perceived by customers. For example, an e-commerce service can allow its customers to purchase products and read customer feedback about products.

FUNCTIONAL (OR PROCESS/DELIVERY) Refers to “how” a service can provide the outcomes defined for technical quality based on specific quality attributes. For instance, the e-commerce service can ensure that webpages load in less than three seconds and that all the purchase transactions are encrypted.

IMAGE Refers to the image or opinions that customers have of a service provider and its products. For example, customers may be more willing to buy goods and services from a well known, established brand rather than from an unknown one.

A technical quality dimension is normally evaluated based on whether or not a service outcome has been perceived or not. However, to determine the process or delivery quality, specific *service quality attributes* have to be defined. Two service quality models have been examined to provide such quality attributes: the SERVQUAL and ISO/IEC 25010:2011 models.

The SERVQUAL service quality model considers the following five quality factors [52]:

- Reliability: a service is being performed dependably and accurately.
- Responsiveness: willingness to help customers and respond promptly to their issues.
- Assurance: service staff conveys confidence and trust to customers.
- Tangible: appearance of physical facilities, personnel, and so on.
- Empathy: a service can provide caring, individualised attention to its customers.

The ISO/IEC 25010:2011 standard [37] for software quality provides a means to determine the quality of software proposed as products within services. As Woodruff [69] points out, customers perceive value from product attributes and from the consequences of using a product (i.e., a software product in this case). The ISO/IEC 25010:2011 specifies two quality models, namely *quality in use* and *system product quality*. The quality in use model contains five quality attributes and a number of sub-attributes:

- Effectiveness
- Efficiency
- Satisfaction: Usefulness, Trust, Pleasure, Comfort
- Freedom from risk: Economic, Health, and Environmental risks
- Context coverage: Context completeness, Flexibility

The system product quality model is composed of eight attributes and a number of sub-attributes. Some of these attributes are performance, security, reliability, confidentiality, and so on.

3.3 SERVICE EXPERIENCE

Hoffman & Bateson [34] argues that customers evaluate services based on the experience that is created for them. When customers purchase a service, what they are doing is to actually purchase an experience that comes along with the service. Furthermore, services must deliver tangible and intangible benefits through the experience that is created for customers. The concepts of quality and experience are closely related. If the perceived value from a service matches customers' expectations, their satisfaction will increase. As a result, the service experience and service quality will be highly rated.

Ultimately, service experience plays an important role in the development of innovative services. den Hertog [16] suggests that service innovation aims to produce a new service experience. Moreover, in Grönroos' quality model, customers' service experience have an effect on whether a new or improved service is perceived to be of high or inferior quality.

According to a literature review performed by Helkkula [33], there are many definitions possible for service experience due to various factors (e.g., servicescape, business model) that come into play. Based on the value concept and Grönroos' definition of service quality, service experience is defined in this thesis as *the evaluation of the level of satisfaction of the value perceived from a service by customers*.

In the service design field, the use of a customer journey map to obtain customers' emotional experience (i.e., joy, anger, frustration, and so on) of touchpoints across a service journey has been widely emphasised. Basically, a touchpoint denotes a *service encounter* or interaction between customers and the service. If customers' evaluation of the value perceived from a touchpoint was good, then the latter may receive a high emotional rating. Otherwise, if

the experience was poor, then the rating may be low. Service organisations can make use of the emotional ratings received to target opportunities for improving poorly rated touchpoints along the customer journey.

Apart from measuring the individual touchpoint experience of customers, a growing number of organisations are now being encouraged to evaluate the *cumulative experiences across multiple touchpoints* along a customer journey as a means to uncover problems with a service and improve the experience [55]. Instead of isolating a touchpoint and measuring its perceived experience by customers, the latter have to form an opinion of the combined experience perceived from all their previous touchpoint experiences encountered along their service journey. The cumulative touchpoint experience is a notion that is supported by the findings of Helkkula [33] who argues that service innovation researchers should consider the idea that “customers do not have an isolated service experience, but rather relate and interpret each current and new service experience to their previous service experiences.”

3.4 THE SERVICE DEVELOPMENT LIFE CYCLE

A service typically undergoes a series of phases as it is originally developed and then improved into a new version. Such phases form part of a service’s development life cycle and its model representation can be obtained from the marketing field in the form of a *company-customer relationship* process [67].

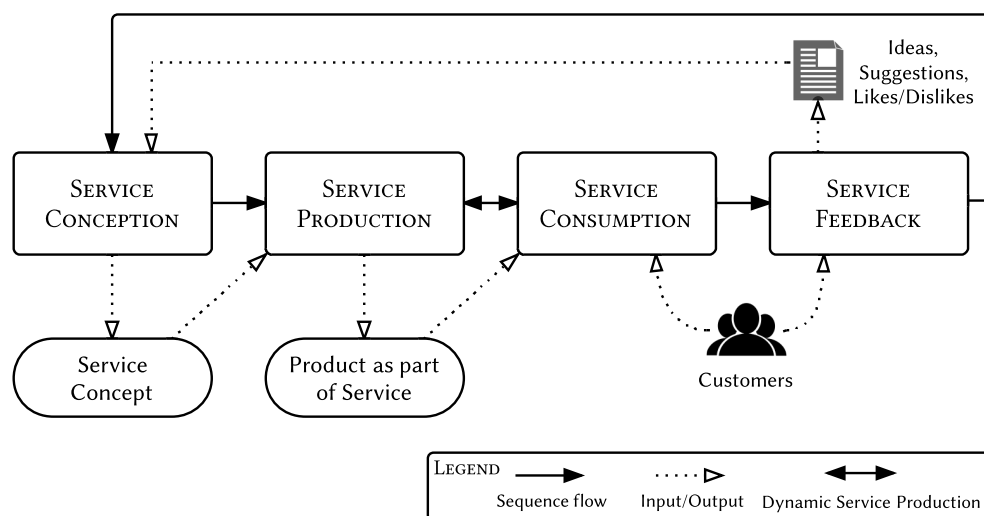


Figure 3: Service Development Life cycle Model

An adapted version of the latter is shown in Figure 3 and consists of the following phases:

CONCEPTION The service conception phase takes place when a service is being conceived and consists of activities that define a service concept as well as resources to support the service production stage.

PRODUCTION This phase entails the creation of any service artifacts which can include the manufacturing of tangible products as well as the provision of service functions. In the case of intangible customer value, the production process happens dynamically at the time consumers make use of them (refer to the *inseparability* characteristic of section 3.1).

CONSUMPTION After customers have purchased or availed of the service (e.g., involving a money transaction), the consumption phase is where customers use the service and perceive and create value (i.e., functional and non-functional benefits) for themselves.

FEEDBACK The last phase, which is not originally part of the company-customer relationship model, has been added to reflect that customer feedback (e.g., ideas, suggestions, likes/dislikes, and so on) is required after customers have consumed the service since customer feedback is required to improve the value proposed by a service [69].

Based on the client interface and service delivery dimensions of service innovation as discussed in section 2.4, a service innovation process needs to ensure that customers can co-design and co-produce the service experience during the service conception phase.

4

THE CUSTOMER VALUE CONCEPT

This chapter addresses the third research objective related to an analysis of the customer value concept based on the benefits for customers from a service innovation perspective. At first, a value terminology is presented followed by the two types of customer value. Then, the relationship between customer value and value proposition is described. The last section deals with a discussion of value perception and creation.

4.1 IMPORTANCE OF CUSTOMER VALUE

The value concept, especially value for the customer, is very important to providers for the development of a service. Value can be described as the *sum of benefits* that customers are willing to obtain in exchange for other forms of value such as money and time [2, 34, 62]. The notion that when customers buy a service, they expect to perceive these benefits in the form of tangible and intangible benefits is known as the *benefit concept* [54].

Customers ultimately have different perceptions of the benefits a service needs to procure them. According to Zeithaml et al. [70], perceived value is subjective and personal, and thus varies among customers. For a coffee shop, for example, the core benefit to some customers might be the tangible cup of coffee that is served to them. However, for other individuals, the core benefit might reside in the intangible service, in terms of staff friendliness and late opening hours, that is being provided to them. More information about customers' value perception is elaborated in section 4.4.

The importance of value for both service providers and their customers have been highlighted in the literature. Woodruff [69] considers customer value to be the next source for competitive advantage for firms by allowing them to better satisfy the needs of their customers and differentiate themselves more from competitors. Customer value is also linked to customer satisfaction and customer loyalty. If the perceived value from usage of a service is not satisfactory, customers' loyalty towards it may be compromised – causing them to stop using the service [23, 41]. Therefore, to consolidate the business relationship a provider has with its customers, *increasing the benefits* being offered to them, in terms of more attractive value propositions or cost reduction schemes, and *improving the service quality* can prove to be crucial drivers for enhancing customers' satisfaction [7, 54].

Note that the term ‘value’ is different to ‘values’ with the latter referring more to the beliefs, convictions, and virtues of a human being. In this thesis, the word ‘value’ is exclusively used to reflect the set of customer benefits that are proposed by a service.

4.2 TYPES OF CUSTOMER VALUE

According to Berry et al. [4], Sandström et al. [57], the types of tangible and intangible benefits that constitute value for customers exist in two primary forms: functional and emotional. However, the service quality dimensions described in section 3.2 offer the notion that customer value seems to exist in a *functional* and a *non-functional* form – with the latter catering for emotional benefits. These two customer value forms are explained as follows:

FUNCTIONAL VALUE Refers to the set of benefits which describe the *tasks or jobs* that a service helps the customer to accomplish. For instance, customers expect to be served food at a restaurant. If the latter, as the service provider, fails to provide customers with their ordered food dishes, then customers will not be able to perceive this functional benefit which would cause many customers to stop visiting the restaurant. Other functional benefits can include the abilities to “reach a specific destination” from a transportation service, “buy a cup of coffee” from a coffee shop service, and “listen and watch videos” from an online video service such as YouTube. Note that functional value is associated with the technical or outcome quality of a service as discussed in section 3.2.

NON-FUNCTIONAL VALUE Refers to the benefits, including *emotional* ones, which illustrate the delivery and image quality dimensions, discussed in section 3.2, of the proposed tasks or jobs through quality attributes such as reliability, responsiveness, pricing, and human emotions. The latter, according to Richins [56], refer to the feelings, moods, and sentiments that a customer experiences during usage of the service such as joy, excitement, nervousness, and anger. Therefore, positive emotions are triggered when customers’ needs and expectations are either met or exceeded while negative feelings are often caused by poor quality service offerings. Based on the restaurant scenario discussed earlier, non-functional benefits for customers can involve the courtesy of the restaurant personnel towards them or the rapidity at which ordered food items are served to them.

According to Grönroos’ service quality model (see section 3.2), functional value exhibits the technical or outcome quality while non-functional value proposes the functional or delivery quality as well as the image quality. So as to avoid any confusion in the use of the term ‘functional’ between value and quality, this thesis will refer to functional value as exhibiting *outcome quality* while non-functional value as exhibiting *delivery quality*.

In terms of market differentiation, the competitive advantages gained from functional value are often short-lived since the latter provides only “basic”

benefits that any given service is required to provide and can easily be copied by competitors. This situation is different for non-functional value which provides greater opportunities for service differentiation. For instance, a coffee shop can offer functional benefits to serve coffee and other beverages like in other coffee shops. However, the quality of the coffee or the way that the coffee is served to customers has the potential to differentiate this coffee shop from another based on such non-functional benefits.

4.3 THE VALUE PROPOSITION RELATIONSHIP

An organisation’s value proposition is defined by Osterwalder [51] as being “what distinguishes itself from its competitors” by proposing value which may be quantitatively or qualitatively expressed such as money and customer experience respectively. A value proposition can therefore be imagined as *providing unique functional and non-functional customer benefits which help to distinguish or differentiate a company’s offerings from its competitors.*

As mentioned before in section 4.2, non-functional benefits offer greater opportunities for service differentiation than functional ones. Apart from unique customer benefits, a service offers other “basic” ones which are in line with what other competitors are proposing in order to meet the basic needs of customers. Figure 4 depicts the relationship between a value proposition and value in terms of customer benefits.

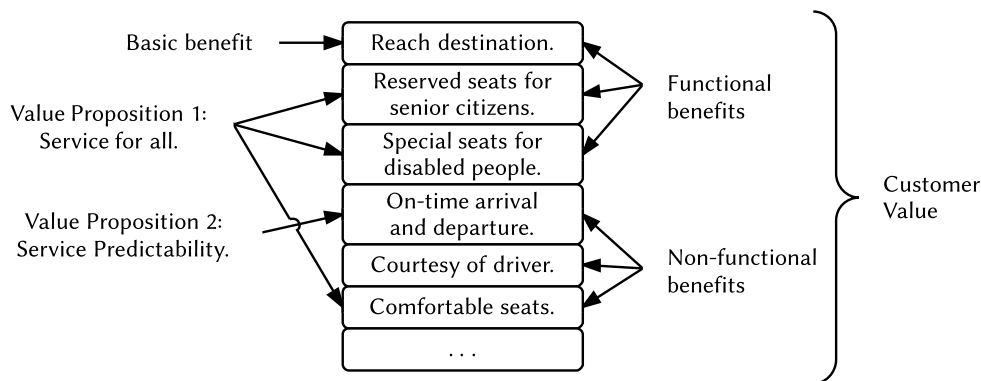


Figure 4: Value Proposition Relationship for a Bus Transport Service

A value proposition thus consists of one or more “unique” functional and non-functional customer benefits proposed by a service while customer value refers to a sum or collection of customer benefits that may form part of one or more value propositions as shown in Figure 4.

4.4 CUSTOMER VALUE PERCEPTION

This section discusses the notion that the benefits being offered by a service need to be perceived by customers in order for *value creation* to actually take place. Furthermore, each customer perceives value in his or her own way due to personal values, needs, preferences, and financial constraints [54].

In the case of a manufactured product, value for customers is regarded as being embedded in the product. The latter along with its embedded value is then exchanged for monetary value with customers. This form of value refers to *value-in-exchange* [65]. But, the latter does not apply to a service based on Service Dominant Logic [65] which states that value is not exchanged, but is rather perceived during usage of the service. This value perception concept is known as *value-in-use* and relates to the principle that value for the customer is only determined by the latter at the time of actual service usage [65]. For example, a web-based email service carries no value to customers when not being made use of, but it becomes useful and allows the customers to create and perceive benefits when they actually use the service and can read and send emails to others.

Edvardsson et al. [22] further elaborates on the customer value perception concept by adding a social reality aspect to explain that value is also uniquely perceived by customers based on their individual social, health, moral, and economic needs amongst others. For instance, a print-based magazine service needs to consider providing access to its publications in a digital format so as to cater for customers who prefer and are used to reading them on electronic devices such as tablets and smartphones.

In effect, the following points regarding customer value perception can be noted:

- Value is perceived differently by one customer to the next. Therefore, providers are responsible to cater for the needs of every customer and ensure that the latter can create value from their services.
- Providers must involve customers during the development of a service – thereby *co-designing* the service and the customer value being proposed [53]. Consequently, customers must also be active participants during the service innovation process as mentioned in subsection 2.5.1.
- Customer value can thus be defined as the *benefits that service providers promise to be created and perceived by customers through usage of a service.*

5

SERVICE INNOVATION REQUIREMENTS AND ASSESSMENT

This chapter first addresses the fifth research objective of this thesis with the identification of requirements for the development of a service innovation approach, and then focuses on the fourth research objective concerned with a review and assessment of the main approaches, techniques, and tools for service innovation.

5.1 SERVICE INNOVATION (SI) REQUIREMENTS

This section deals with the identification of service innovation requirements for a service innovation approach based on the research material presented in chapter 2. Irrespective of the type of innovation, such as product, radical, incremental, and so on, a service innovation framework needs to address one or more innovation dimensions in terms of the service concept (SCI), client interface (CII), service delivery system (SDI), and technology (TI) (refer to section 2.4). Each one of these dimensions focus on specific objectives which form part of the service innovation requirements outlined in Table 1.

With the exception of the service delivery and technology requirements, the other two *service innovation requirements* are broken down into one or more *secondary requirements*. These secondary requirements help to ensure that a service innovation approach is designed according to *sound principles and concepts* that are crucial for service innovation as outlined in the previous chapters. Thus, to fulfil the SCI and CII service innovation requirements, it is *necessary* that their secondary requirements are also fulfilled.

Table 1: Service Innovation Requirements

SI REF.	SI REQUIREMENT
SCI	Creation of new or improved customer benefits.
CII	Improvement of customers' service experience.
SDI	Identification of new or improved service channels.
TI	Creation of new or improved service software features.

5.2 SERVICE CONCEPT INNOVATION (SCI) REQUIREMENTS

This section deals with the identification of the secondary requirements for the service concept innovation requirement based on the key service aspects discussed in chapter 3 and the value concept discussed in chapter 4.

Table 2: Service Concept Innovation Requirements

SCI REF.	SCI REQUIREMENT
SCI-1	Human-based service
SCI-2	Online-based service
SCI-3	Outcome service quality
SCI-4	Delivery service quality
SCI-5	Image service quality
SCI-6	Functional value
SCI-7	Non-functional value
SCI-8	Value proposition
SCI-9	Value-in-use

As shown in Table 2, there are nine secondary requirements for the service concept innovation requirement which are explained below:

- SCI-1: Human-based service – Enables the creation and development of human-based services.
- SCI-2: Online-based service – Enables the creation and development of online-based services. *A combination of both human-based and online-based services is also possible.*
- SCI-3: Outcome service quality – Identifies outcome (technical) service quality for each articulated customer benefit.
- SCI-4: Delivery service quality – Identifies delivery (process) service quality for each articulated customer benefit.
- SCI-5: Image service quality – Identifies image quality for each articulated customer benefit.
- SCI-6: Functional value – Identifies and articulates individual functional customer benefits.
- SCI-7: Non-functional value – Identifies and articulates individual non-functional (including emotional) customer benefits.

- SCI-8: Value proposition – Identifies value propositions from functional and non-functional customer benefits.
- SCI-9: Value-in-use – Adopts the customer value perception concept of value-in-use as defined by the Service Dominant Logic.

5.3 CLIENT INTERFACE INNOVATION (CII) REQUIREMENTS

This section addresses the identification of the secondary requirements for the client interface Innovation requirement focused on the improvement of the service experience as discussed in section 3.3.

Table 3: Client Interface Innovation Requirements

CII REF.	CII REQUIREMENT
CII-1	Co-design of the service
CII-2	Emotional experience
CII-3	Cumulative experiences

As Table 3 shows, there are three secondary requirements for the client interface innovation requirement which are described below:

- CII-1: Co-design of the service – Enables customers, service partners, and service employees to participate in the service design during the service conception phase.
- CII-2: Emotional experience – Evaluates the emotional experience of customers after they have consumed a service composed of touchpoints or points of service interaction.
- CII-3: Cumulative experiences – Evaluates the cumulative experiences of customers after they have consumed a service along *parts* of the service journey composed of touchpoints or points of service interaction.

Note that improving the CII also refers to the requirements (from SCI-3 to SCI-8) for the service concept innovation. In order to avoid duplication, these requirements are not considered for the client interface innovation.

5.4 ASSESSMENT OF EXISTING SERVICE INNOVATION APPROACHES

This section is concerned with an assessment of the innovation approaches, including techniques and tools, which were identified in section 2.1 for the purpose of comparing them later on with ServiceMIF based on the requirements outlined in the previous sections. Five service innovation approaches

were identified, namely the FORTH innovation method, the *outcome-driven* innovation process, the AT-ONE methodology [11], the service design toolkit¹, and ServiceML [3]. Moreover, the smaply tool² can serve as a reference for comparison from a tool-based perspective.

Due to lack of sufficient expertise and time spent with the *outcome-driven* innovation process and the FORTH innovation method, these two approaches will not be considered for evaluation. Consequently, the rest of the service innovation approaches will be assessed and a description of each one is given as follows:

AT-ONE Consists of five lenses, namely Actors, Touchpoints, Offering, Need, and Experience, which are considered during the development of new services. AT-ONE relies on the participation of service stakeholders in workshops which are meant to generate new ideas for each lens. The main tools of AT-ONE are the touchpoint cards used for describing the channels of interactions with customers and the idea cards for noting down new ideas during the workshops.

SERVICE DESIGN TOOLKIT (SDT) Provides a set of different service design techniques and tools for the development of new services based on eight steps – from framing to prototyping and feasibility. The list of service design techniques is fairly extensive with sixteen different types among which are the most common ones including personas, customer journey maps, and service blueprints. Each technique is supported by a printable template that is completed with the help of service stakeholders during workshops.

SERVICEML (SML) Based on the AT-ONE method, ServiceML is comprised of three different language packages, namely Business-SoaML, Light-USDL, and Service Journey Map, for providing modelling capabilities to each lens of AT-ONE. For example, an Actor Network model is used for the Actors' lens to identify the roles and deliverables of the service actors. Note that ServiceML represents initial research carried out during the course of this thesis for service innovation.

SMAPLY Consisting of three tools, namely personas, stakeholder maps, and customer journey maps, Smaply offers an integrated approach meant for “everyone innovating or improving customer experiences” by capturing information generated during service design workshops. While Smaply is not a service innovation approach per se, there is a process that requires the creation of personas to stakeholder relationships and customer journeys focused on generating innovative service concepts.

Each service innovation approach was *assessed based on an analysis of their methodology and processes for service innovation* obtained from their official documentation.

The results of the assessment based on the innovation requirements along with a discussion of the results are provided in the following subsections.

¹ Service design toolkit. Accessible at <http://www.servicedesigntoolkit.org/>

² Smaply tool. Accessible at <http://smaply.com/>

5.4.1 Assessment based on SI Requirements

As noted in section 5.1, in order to fulfil the SCI and CII service innovation requirements, it is *necessary* that their secondary requirements are also met. The results of this assessment, based on the service innovation requirements, are shown in Table 4 which rely on the assessment results of the secondary requirements for the service concept innovation (SCI) and client interface innovation (CII) requirements shown in Table 5 and Table 6 respectively.

Table 4: Assessment of service innovation approaches based on service innovation (SI) requirements. (Note: ✓ denotes *fulfilled*, × denotes *not fulfilled*)

SI REF.	APPROACH			
	AT-ONE	SDT	SML	Smapply
SCI: Service Concept Innovation	×	×	×	×
CII: Client Interface Innovation	×	×	×	×
SDI: Service Delivery Innovation	✓	✓	✓	✓
TI: Technology Innovation	×	×	×	×

An explanation of the SI results is given below:

- SCI: All the approaches do not fulfil one or more secondary SCI requirements. Thus, no approach has fulfilled the SCI requirement.
- CII: All the approaches do not fulfil one or more secondary CII requirements. Thus, no approach has fulfilled the CII requirement.
- SDI: The identification of new or improved service delivery channels is a feature catered for by all approaches.
- TI: No approach provides opportunities to clearly create software-based improvements in terms of new or improved features as well as explicit software benefits for customers.

5.4.2 Assessment based on SCI Requirements

The results of this assessment, which are based on the service concept innovation requirements, are shown in Table 5. An explanation of the SCI results is given as follows:

- SCI-1: All the approaches consider the design of human-based services.
- SCI-2: All the approaches consider the design of online-based services.

Table 5: Assessment of service innovation approaches based on service concept innovation (SCI) requirements.

(Note: ✓ denotes *fulfilled*, × denotes *not fulfilled*, ÷ denotes *partially fulfilled*)

SCI REF.	APPROACH			
	AT-ONE	SDT	SML	Smapply
SCI-1: Human-based service	✓	✓	✓	✓
SCI-2: Online-based service	✓	✓	✓	✓
SCI-3: Outcome service quality	÷	÷	×	×
SCI-4: Delivery service quality	÷	÷	×	×
SCI-5: Image service quality	✓	×	×	×
SCI-6: Functional value	×	×	×	×
SCI-7: Non-functional value	×	×	×	×
SCI-8: Value proposition	÷	×	÷	×
SCI-9: Value-in-use	✓	×	×	×

- SCI-3: Both AT-ONE and SDT consider the outcome quality during service design workshops. However, they only partially fulfil it since they do not explicitly identify the outcome quality for each customer benefit. No such consideration for SML and Smapply.
- SCI-4: Both AT-ONE and SDT consider the process or delivery quality during service design workshops. However, they only partially fulfil it since they do not explicitly identify each quality for each customer benefit. No such consideration for SML and Smapply.
- SCI-5: Only AT-ONE fulfils this requirement via its Offering lens.
- SCI-6: No approach explicitly articulates functional value in the form of customer benefits.
- SCI-7: No approach explicitly articulates non-functional value in the form of customer benefits.
- SCI-8: Both AT-ONE and ServiceML consider the identification of value propositions via their Offering lenses. However, they do not link value propositions to individual functional and non-functional benefits for customers.
- SCI-9: Only AT-ONE focuses on the value-in-use principle thanks to its Touchpoint lens.

5.4.3 Assessment based on CII Requirements

The results of this assessment based on the client interface innovation requirements are shown in Table 6. An explanation of the CII results follows.

Table 6: Assessment of service innovation approaches based on client interface innovation (CII) requirements.
(Note: ✓ denotes *fulfilled*, × denotes *not fulfilled*)

CII REF.	APPROACH			
	AT-ONE	SDT	SML	Smapply
CII-1: Co-design of the service	✓	✓	✓	✓
CII-2: Emotional experience	×	×	×	×
CII-3: Cumulative experiences	×	×	×	×

- CII-1: All the approaches enable service stakeholders to participate in the service design process.
- CII-2: All the approaches consider the service experience that customers would have during the conception phase of a service and not after service consumption.
- CII-3: None of the approaches consider the evaluation of customers' cumulative experience along parts of a service journey after service consumption.

5.4.4 Discussion of the Assessment Results

The results of the assessment of existing service innovation approaches reveal three primary findings:

- A. Proper means of identifying service innovation opportunities for the creation of new or improved customer value, service channels as well as software features, which may arise from customer feedback after a service is consumed, are lacking in all approaches.
- B. The relationships between value propositions, customer benefits, and customer value are not well established.
- C. Customer benefits are not individually articulated, but rather treated as being packaged inside a service concept being proposed to customers. This observation is confirmed by Wetter Edman [66], based on a survey with professional service designers, who found out that customer value seems to be a concept that is dealt with implicitly by service designers as a natural outcome of a service design activity. Therefore, customer benefits are not explicitly articulated as described in section 4.2.

These findings are important and will subsequently help in developing a better service innovation approach through the value development framework proposed in this thesis.

II

SERVICEMIF

THE SERVICE MODEL INNOVATION FRAMEWORK

This chapter is the first of three chapters to address this thesis' sixth research objective and discusses the development and implementation of the Service Model Innovation Framework (ServiceMIF). In this chapter, the architecture of ServiceMIF's is described as well as its value benefit template component.

6.1 OVERVIEW OF SERVICEMIF

ServiceMIF aims to provide a framework to fulfil the various requirements for service innovation as discussed in chapter 5. It consists of a methodology for the development and improvement of value, a modelling language for the creation of service models, and a graphical model editor tool to support the creation and manipulation of these service models.

In essence, ServiceMIF can assist service developers in the development of new services or improvement of existing ones by taking into account the development of customer value from the service conception to the production, consumption, and feedback phases.

6.2 ARCHITECTURE OF SERVICEMIF

ServiceMIF's architecture, shown in Figure 5, consists of three components, namely service models, the DISSECT approach for value development, and a value benefit template for describing a customer benefit in a textual format. The latter is discussed in more detail in section 6.3.

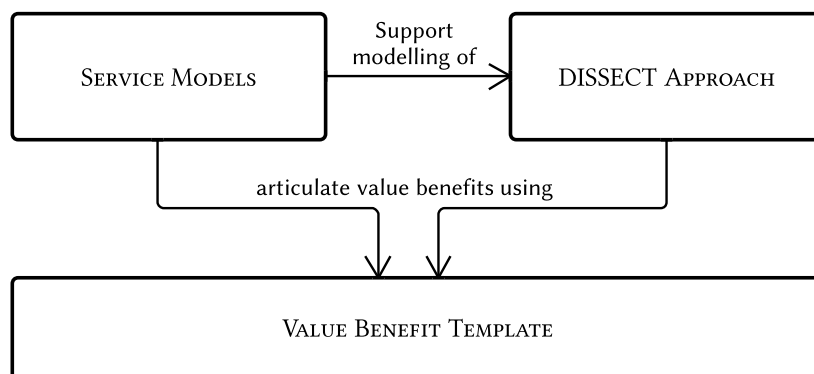


Figure 5: ServiceMIF Architecture

The DISSECT approach (see the next chapter) is comprised of five distinct stages, namely DIScovery, Solicitation, Evaluation, Capture, and Translation, whose modelling requirements are supported by five service models. Both the service models and the DISSECT approach articulate value benefits by making use of a value benefit template that is presented in the next section.

6.3 THE VALUE BENEFIT CONCEPT

In ServiceMIF, the individual benefits that form part of the value proposed by a service are called *value benefits*. The latter not only define the functional and non-functional benefits for the customer, but also describe how these benefits will be perceived or created by the customer. The goal of a value benefit is to not only describe the customer benefit, but to capture also the service encounter. This provides a means to understand the service delivery mechanism of the benefit which can be analysed for problems and improved based on innovation opportunities outlined in subsection 7.6.1.1.

6.3.1 Components of a Value Benefit

Each value benefit provides a “snapshot” of a service encounter that describes the *service context* in which a service stakeholder performs a *service action* which is going to trigger a *customer benefit*.

6.3.1.1 The Service Context

The service context describes the factors, in terms of the ‘Who’, ‘Where’, and ‘When’ of a service encounter, which typically involve some form of physical and/or virtual interactions between a customer and one or more actors from either the service provider’s or the network partner’s side. These three service context factors are described as follows:

- *Who is interacting with the customer(s) during the service encounter?* This question relates to service employees from the provider’s or network partner’s side who either physically or virtually interact with customers during a service encounter.
- *Where is the service encounter taking place?* This question is concerned with the servicescape or the physical/virtual environment in which a service encounter is taking place involving an interaction among service actors including customers. If the service encounter involves the usage of a product, then this ‘Where’ question refers to the place or location where the product is being used and value is being created.
- *When is the service encounter happening?* The goal behind this question consists of two parts: (1) to identify the period in time during which the service encounter takes place, and (2) to understand the set of events that led to the current service encounter.

Note that the structure of a service context is *flexible to accommodate the varying nature of services* and customer benefits being proposed. As a result, a service developer must decide on the degree of precision when elaborating service context factors as long as these are sufficient to describe the service context in which customers are promised to perceive a benefit.

As explained above, a service context allows service developers to pinpoint precisely the factors which contribute to the provision of a benefit. This capability can come in handy when, for instance, certain value benefits are not being perceived properly by customers. In this case, service developers and customers would be in a very good position to analyse the cause(s) of the problem and implement any necessary modifications to improve the service context. These modifications are identified during the Translation stage of the value development approach, DISSECT, as discussed in section 7.6.

6.3.1.2 *Service Action*

A service action or activity refers to one or more operations that a service stakeholder, such as a customer, a provider's employee, and a service network partner, *performs or would like to perform* as part of a service encounter. Such operations are the ones which will trigger the benefits for the customer.

For a customer, a service action can be linked to the use of one or more senses of a human being such as hearing, sight, taste, smelling, and touch. Depending on the type of service and the service context, the most relevant human senses should be chosen in order to accurately characterise the means by which a customer *interacts with a service* to perceive value benefits. For example, a customer who calls an after-sales service requires the use of hearing and voice so as to respectively hear and communicate with the called party.

6.3.1.3 *Customer Benefit*

As described in section 4.4, a customer benefit is part of a set of benefits or value that customers expect to perceive through usage of a service. Since customer benefits can be either functional or non-functional, value benefits are consequently of these two types.

6.3.2 *Value Benefit Template*

A value benefit is represented using a *value benefit template* which exhibits the following properties:

- allows a service provider to articulate its offerings or value benefits to match the needs of its customers,
- employs a textual format that can be easily understood by all service stakeholders including customers and network partners,
- captures both functional and non-functional customer benefits which can be both qualitatively and quantitatively described according to the service quality attributes described in section 4.2.

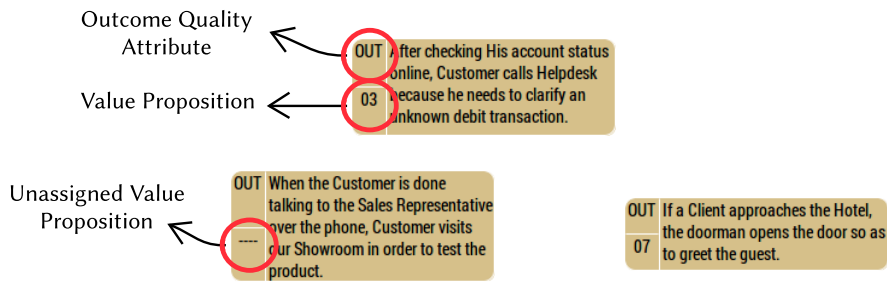


Figure 7: Examples of Functional Value Benefits

right-hand side while the left-hand side allows the insertion of *two service tags*: the top one indicates a *service quality attribute tag* while the bottom one shows the *value proposition tag* which is associated with the functional value benefit. Note that for a functional value benefit, the service quality attribute tag is denoted by 'OUT' to indicate that it enforces the outcome quality as discussed in section 4.2. Moreover, if a value benefit has not been assigned to any value proposition, then the value proposition tag is marked with '---'. If there are more than one value propositions to which the value benefit is assigned, then its value proposition tag is marked with '***'.

6.3.2.2 Non-Functional Value Benefit Template

Based on similar principles that govern its functional counterpart, a non-functional value benefit is described as shown in Figure 8.

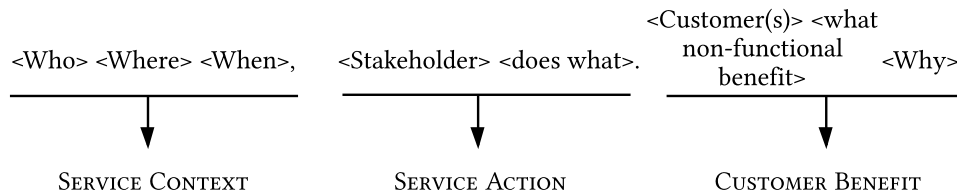


Figure 8: Non-Functional Value Benefit Template

The service context and the service action components are structurally similar to those of a functional value benefit template. However, the benefit for the customer is expressed as an independent sentence starting with the word 'Customer(s)' followed by the <what non-functional benefit> <why> benefit part. This has been done to differentiate both types of value benefits from each other.

Examples of non-functional value benefits expressed using the template are given as follows:

- Banking Service using <When>, <Stakeholder> <does what>. *Customer* <what non-functional benefit>:

“After talking to a friend about a problem with the online banking service, customer phones the help desk. Customer is connected to a help desk personnel in less than 1 minute.”

- Consumer Electronics Service using <When> <Where>, <Stakeholder> <does what>. *Customers* <what non-functional benefit> <why>:

“When customers are inside the showroom, customers talk to a showroom personnel. Customers are very happy because the showroom personnel smiles often and talks in a warm and pleasant tone of voice.”

- Hotel Service using <When> <Where>, <Stakeholder> <does what>. *Customer* <what non-functional benefit> <why>:

“If a client leaves a bag unattended in the hotel lobby, the hotel security personnel should immediately verify its contents according to our security protocols if the owner cannot be traced. Customer is pleased and more relaxed due to the hotel’s high security standards.”

- Online Music Service using <When>, <Stakeholder> <does what>. *Customer* <what non-functional benefit> <why>:

“When the new music service website has been loaded, customer can see our well-known logo and branding information on the front page. Customer feels reassured regarding the usage of the service due to our company’s reputation for trust and integrity.”

Figure 9 shows how these non-functional value benefits are modelled in ServiceMIF.

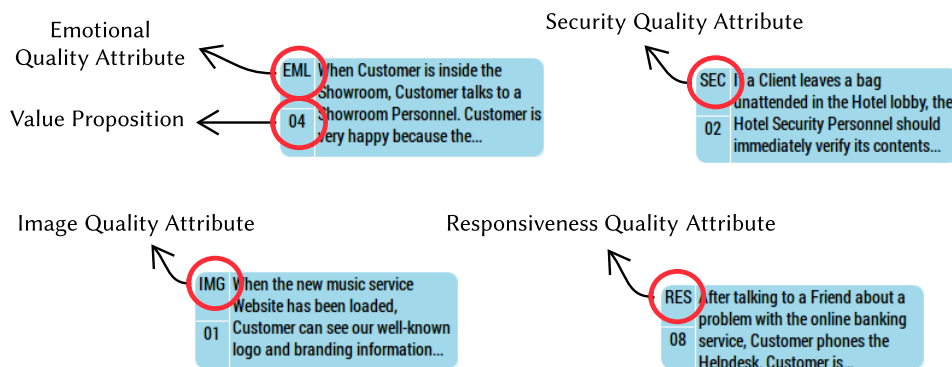


Figure 9: Examples of Non-Functional Value Benefits

Each non-functional value benefit is represented as a light blue rounded rectangle whose contents are similar to those of a functional one. Notice that each non-functional value benefit has a quality attribute tag: ‘EML’ for emotional, ‘SEC’ for security, ‘IMG’ for image, and ‘RES’ for responsiveness. Other non-functional quality attributes were discussed in section 3.2.

 THE DISSECT APPROACH AND SERVICE MODELS

This chapter is the second of three chapters that discuss the development and implementation of the value development framework, ServiceMIF. In this chapter, the other two components, namely the DISSECT approach and the service models, are described. Each DISSECT stage addresses the principles, methodology, the metamodel of the service model, and the service model editor used in that stage using a small example of the *Concierge* case study described in section 9.1.

7.1 OVERVIEW OF DISSECT

DISSECT is the name given to the value development approach of ServiceMIF to fulfil the service innovation requirements and secondary requirements identified in chapter 5. In order to satisfy these requirements, the DISSECT approach makes use of the principles and concepts outlined in the Background Study part. It is comprised of five value development stages known as DIScovery, Solicitation, Evaluation, Capture, and Translation. An overview of the objectives of the five DISSECT stages is shown in Figure 10. Each of these stages will be discussed in the next sections.

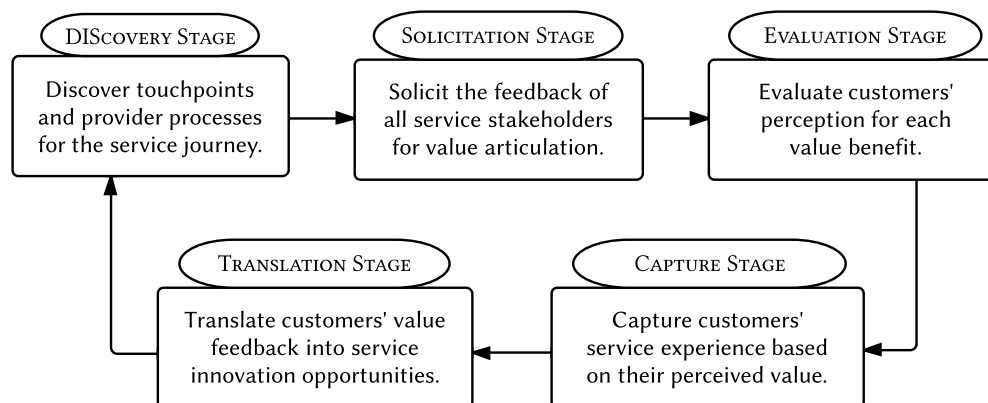


Figure 10: Overview of the DISSECT Approach

DISSECT follows a predefined process from DIScovery to Translation which is mapped onto the four service development life cycle phases (see section 3.4).

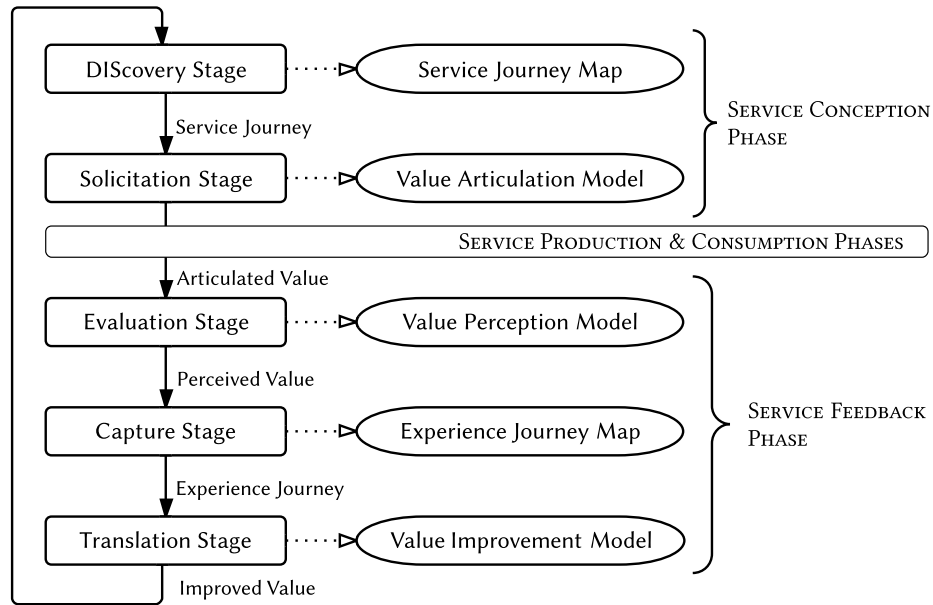


Figure 11: The DISSECT Stages and Service Models

As shown in Figure 11, each DISSECT stage uses a corresponding service model to process customer value as the latter flows from one stage to the next. For example, the Evaluation stage uses a Value Perception Model to produce perceived value that is used as input in the Capture stage. The end of the Translation stage signifies that a “version” of a service has been developed. The DISSECT approach can then be applied again for the improvement of existing versions of the service.

7.2 FIRST DISSECT STAGE: DISCOVERY

The first stage of the DISSECT approach, called *DIScovery*, focuses on the discovery of two main aspects of a service, namely the service journey and the provider processes that will help in the articulation of value benefits in the next stage. In this section, the various parts of the DIScovery stage are presented including its principles, methodology, the supporting service model called a *Service Journey Map*, and the tooling support using a small example of the *Concierge* case study.

7.2.1 *DIScovery* Stage: Principles

The DIScovery stage marks the beginning of the DISSECT approach and takes place during the conception phase of a service. In this stage, there are two service aspects which are necessary for service developers to consider:

- A. identifying the points of service interaction in the form of touchpoints through which value benefits can be proposed to customers,

- B. identifying provider processes that are necessary to support the proper execution of touchpoints.

In effect, these two service aspects respectively define ‘where’ and ‘how’ value benefits can be proposed to customers of a service.

7.2.1.1 *Identification of Service Touchpoints*

As explained in section 6.3, value benefits are proposed to customers via one or more service encounters which can involve physical and virtual interactions between service providers and their customers. These interactions form part of a service touchpoint which provides the ability to describe the service context and service actions for creating customer benefits as expressed by a value benefit template. Therefore, a touchpoint offers the right vehicle for proposing value benefits along a service journey to customers.

7.2.1.2 *Identification of Supporting Provider Processes*

A *provider process* defines the required tasks that a service provider and its network partners need to perform in order to execute touchpoint activities that deliver value benefits to customers. For example, a touchpoint, which describes a customer contacting a service help desk, needs to be supported by a provider process that allows help desk agents to communicate with the customer to resolve any problem. The identification of provider processes is important as they help the service developer in the following ways:

- A. to identify the service actors involved in supporting the execution of a touchpoint. The activities performed by these service actors can then be improved if customers encounter problems in the touchpoint or are not experiencing certain value benefits,
- B. to determine if a value benefit can be realistically proposed in a touchpoint based on an evaluation of several business factors such as time, effort, and complexity of the tasks needed to be completed in a provider process. This situation is exemplified below.

Consider Figure 12 which shows two touchpoints as well as two associated provider processes that describe how customers make their online purchases and later receive their packages by post.

If a value benefit that promises customers to receive their bought packages after two days following an order, is proposed in the second touchpoint, namely ‘Receive Package’, then customers will not be able to perceive the value benefit. This is because for some orders, the packages may have to be procured from external warehouses which typically involves more than three to four business days. Therefore, the value benefit must be changed to reflect the most probable delivery time such as after four or five business days.

A similar analysis can thus be conducted on other value benefits to ensure that they can be effectively proposed based on the constraints of the provider processes involved.

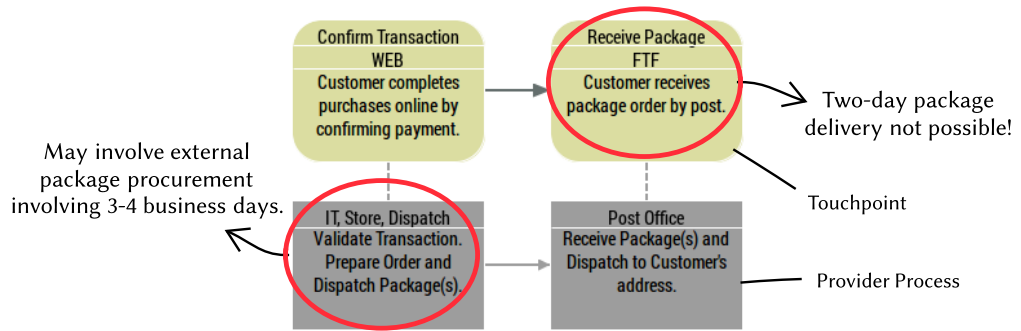


Figure 12: Example showing Importance of Provider Processes

7.2.2 DIScovery Stage: Methodology

The methodology of the DIScovery stage is first described for the case of a new service development followed by that for an improvement of an existing service originally developed using the DISSECT approach.

7.2.2.1 New Service Development

During the development of a new service, the DIScovery stage' methodology consists of a number of steps as shown in the process model of Figure 13.

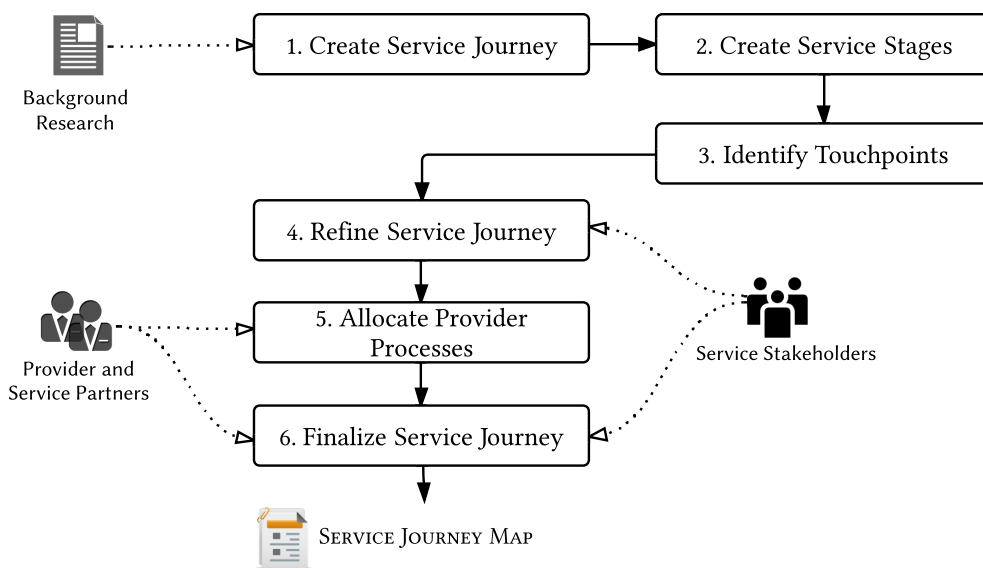


Figure 13: DIScovery Stage Process for New Service Development

Before the process can actually begin, service developers are expected to have completed any required background research concerning the company, customers, and the service environment with the help of relevant service design techniques and tools [60] such as as personas, service ecology maps,

and service blueprints. The DIScovery stage for a new service development can then be performed according to the following steps:

1. *Create Service Journey Map*: An example is shown in subsection 7.2.4 based on the metamodel diagram in subsection 7.2.3. Record generated data from the steps that follow.
2. *Create Service Stages*: For customers of a specific customer segment, break their service journey into a set of logical stages that aim to fulfil a specific customer objective which has been identified with the help of personas. Each such objective can be considered as a small step in order to fulfil the overall goal of the service journey.
3. *Identify Touchpoints*: For each service stage, identify service encounters and create corresponding touchpoints that can provide opportunities to propose value benefits to customers with the help of personas and a service ecology map.
4. *Refine the Service Journey*: Once touchpoints have been identified, the service journey model produced so far can be presented to customers such that their feedback can be used to refine the service journey.
5. *Allocate Provider Processes*: Once service stages and touchpoints have been created, identify provider processes that are needed to support each touchpoint execution with the collaboration of service employees and network partners. Note that, for better understanding, more than one provider process can be assigned to a touchpoint if the set of tasks can be logically separated into several provider processes. For instance, a service blueprint model can serve as an input to identify these tasks for the creation of provider processes. Each provider process can for example act as a bridge for connecting corresponding parts, such as onstage and backstage employee actions, of a service blueprint.
6. *Finalise the Service Journey Map*.

Note that service developers are responsible to arrange workshops and brainstorming sessions with the service stakeholders in order to obtain their feedback based on steps four, five, and six as outlined in Figure 13.

7.2.2.2 Existing Service Improvement

The methodology for the improvement of an existing service differs slightly to that for the development of a new service and is described according to the following set of steps:

1. *Create a new Service Journey Map*
2. *Retrieve the Service Journey Map* of the previous service version.
3. *Retrieve the Experience Journey Map* of the previous service version that was obtained during the Capture stage (see section 7.5) and use it as an aid to analyse the previously perceived service experience.

4. *Analyse Identified Service Improvement Changes*: Repeat steps two to four in subsection 7.2.2.1 by taking into consideration all the identified service improvement changes such as the creation of new touchpoints, modification and deletion of existing touchpoints as explained in subsection 7.6.1.3.
5. *Finalise the New Service Journey Map*.

7.2.3 Metamodel of the Service Journey Map

The DIScovery stage makes use of a Service Journey Map whose metamodel is depicted in Figure 14. A Service Journey Map consists of model elements including Service Stages, Touchpoints, and Provider Processes.

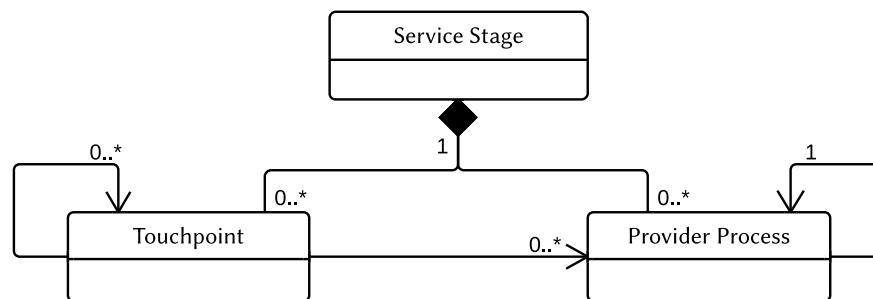


Figure 14: Metamodel of the Service Journey Map

A Touchpoint can be linked to one or more other Touchpoints. A Provider Process can be linked to another Provider Process. In addition, a Touchpoint can be attached to one or more Provider Processes. Both the latter and Touchpoints form part of a Service Stage.

7.2.4 Service Journey Map Example and Model Editor

ServiceMIF's graphical model editor support for a Service Journey Map is shown in Figure 15 based on a small example of *Concierge*.

A service stage along with two touchpoints and two provider processes are shown on the diagram. The 'Booking Stage' represents a service stage as a white rectangular box with a black border. Touchpoints, namely 'Book Event' and 'Receive Confirmation', are shown as light brown rounded rectangular boxes. Each touchpoint consists of a *name*, a service interaction *channel*, and the *activity* performed by a customer during the interaction. Provider processes are shown as grey rectangular boxes with *service actors* which describe the actors from the provider's side involved in fulfilling a set of *service tasks* to support a touchpoint execution. For instance, *Concierge's* 'IT and Booking' departments are the ones involved in the processing and validating of every

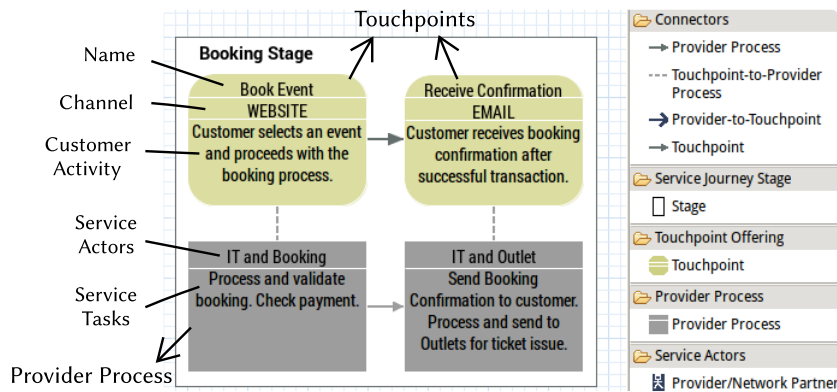


Figure 15: The Service Journey Map of the DIScovery Stage

booking transaction made by customers through the 'Book Event' touchpoint as shown in Figure 15.

A grey arrow is used to link two touchpoints together while a light grey one connects two provider processes to each other. Lastly, a light grey dotted arrow is used to link touchpoints and provider processes together.

7.3 SECOND DISSECT STAGE: SOLICITATION

The *Solicitation* stage of DISSECT involves soliciting the feedback of all the service stakeholders to articulate the right set of value benefits for the right customers using the value benefit template described in subsection 6.3.2. The Solicitation stage takes place in the service conception phase. In this section, the various parts of the Solicitation stage are presented including its principles, methodology, the supporting service model called a *Value Proposition Model*, and the tooling support using a small example of *Concierge*.

7.3.1 Solicitation Stage: Principles

After having identified 'where' and 'how' value benefits can be proposed to customers of a service, the Solicitation stage is concerned with *what* value benefits to offer and *why* these need to be provided. Three factors have been identified to contribute to the articulation of value benefits, namely customer needs, value propositions, and business capabilities.

7.3.1.1 Customer Needs

Value benefits must be connected to the latent needs and quality expectations of customers for each stage of a service. When these value benefits have been articulated for each touchpoint of a service stage, additional ones can be created to improve the quality of the service – such as non-functional value benefits which provide the greatest opportunities for service differentiation (refer to section 4.2).

Although value benefits should cater for a wide range of needs, desires, and wants of customers, service developers should make sure that only the most relevant ones are picked up. For example, value benefits that appeal to only a minor group of customers should in general not be articulated at the expense of other value benefits that are potentially for a wider audience. Moreover, if certain value benefits do not represent the business objectives of a service provider, then they need to be discarded. This is why in the Solicitation stage, the participation of all major service stakeholders is required. A list of some of the factors that service developers need to consider before the articulation of value benefits is shown below:

- service environment: social and economic trends, legal framework and policies, technological capabilities, human interaction tools, and so on.
- business aspects: organisational objectives, business model, business partnerships, business risks, expenses, manpower, and so on.
- customer characteristics: technological awareness, expectations, social and economic profile, desires, past experiences, and so on.

These pieces of information can be obtained based on the feedback from the service provider and any service network partner as well as based on the necessary background research performed before the start of the DIScovery stage as mentioned in subsection 7.2.1.

When articulating value benefits to meet customers' needs, it is crucial that such value benefits are verified based on feedback from potential users of the service. Various service design tools and techniques, such as storytelling and prototyping, can be utilised to test any service concept with real customers to ensure that the proposed benefits can be reliably perceived or created by them under the same service context and based on the same service action.

7.3.1.2 *Value Propositions*

The articulation of value benefits based on customers' needs ensures that the "basic" service requirements are covered. In addition, service providers must offer value propositions which contain unique value benefits aimed at the differentiation of a service from others as explained in section 4.3. As a continuation of the value benefit articulation exercise, service developers must define value benefits that are able to implement one or more of the value propositions identified for customers.

The articulation of these *unique* value benefits can happen in two ways. The first one involves selecting from the list of available value benefits produced based on customer needs in subsection 7.3.1.1. This selection process is not guaranteed to find the right set of value benefits to propose as part of one or more value propositions. Thus, there is the possibility that no value benefit can be categorised into being "unique". If this situation arises, service developers then have to create new value benefits that are specifically aimed towards fulfilling the requirements of one or more value propositions. In this case, customers and other stakeholders will have to be consulted again and any newly created "unique" value benefits will have to be verified and tested.

7.3.1.3 *Business Capabilities*

A service provider needs to ensure that it has the right business capabilities such as infrastructure, manpower, and expertise in order to support the provision of value benefits through tasks performed by provider processes. As explained previously in subsection 7.2.1.2, value benefits may need to be modified or removed if a service provider and its partners cannot guarantee their provision due to business constraints.

For each articulated value benefit in a touchpoint, service employees need to confirm if all the tasks required to be performed in a provider process can reliably be provided based on the provider's business capabilities.

If many value offerings are competing for the same business capabilities, service providers may have to prioritise their value offerings based on their current business capabilities that they have.

If the provision of a value benefit cannot be sustained or will not be maintained when the service has been rolled out, then service developers must discard or modify the value benefit. For instance, a service help desk might propose a value benefit which promises to connect customers with a help desk agent in less than fifteen seconds. If the number of customers rise, then the number of help desk agents should be increased accordingly so as to cater for the added number of customers. Otherwise, customers might not be able to perceive the value benefit of the fifteen second waiting time if all help desk agents are kept busy over the phone for more than fifteen seconds. To solve this issue, the service provider can either remove the value benefit, add new help desk personnel, or readjust the currently proposed waiting time period.

7.3.2 *Solicitation Stage: Methodology*

The methodology of the Solicitation stage is first described for the case of a new service development followed by that for an improvement of an existing service originally developed using the DISSECT approach.

7.3.2.1 *New Service Development*

The development of a new service, using the Solicitation stage's methodology consists of the steps outlined in the process model of Figure 16. These steps are described as follows:

1. *Create Value Articulation Model*: An example is shown in subsection 7.3.4 based on the metamodel diagram in subsection 7.3.3. Record generated data from the steps that follow.
2. *Retrieve the Service Journey Map* produced in the DIScovery stage.
3. *Articulate Value Benefits*: Using the Service Journey Map, brainstorm on ideas for service concepts that can achieve the goals of customers for each stage of the service. Based on customer research performed in the DIScovery stage as well as inputs from service employees and service network partners, identify the quality attributes that the service

should exhibit. Then, articulate functional and non-functional value benefits for each service concept associated with a touchpoint using the value benefit template discussed in subsection 6.3.2. Each value benefit should be assigned a service quality attribute.

4. *Connect Value Benefits to Value Propositions:* For each value proposition defined in a business model, such as a Business Model Canvas [51], identify the value benefits articulated thus far that will help implement the value proposition. Articulate new value benefits that will meet the value proposition using inputs from employees and network partners.
5. *Connect Value Benefits to Customer Needs:* With the help of actual service customers, verify if each value benefit proposed in steps one and two meet their expectations and needs. Any customer feedback provided can then be used to either modify or remove the value benefit. Additionally, new value benefits can be articulated based on such feedback.
6. *Prioritise Value Benefits based on Business Capabilities:* Evaluate whether each value benefit can be successfully provided by the service provider and its partners. If a business capability is lacking, value benefits need to be either modified or removed and reconsidered for the next service iteration. The impact of any modification or removal of a value benefit needs to be assessed. Go back to steps one, two, and three if the articulation of value benefits needs to be performed again.
7. *Finalise the Value Articulation Model.*

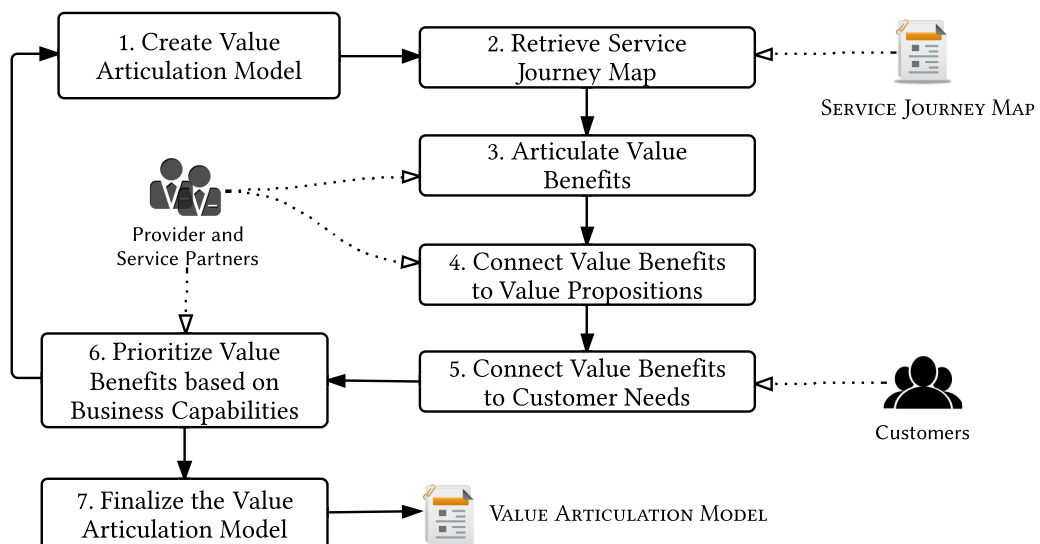


Figure 16: Solicitation Stage Process for New Service Development

Once the Solicitation stage is completed, the production of the service which can include the development of a product can go ahead. Moreover,

service duties and responsibilities can be communicated to all service teams involved in the provision of the articulated value benefits.

7.3.2.2 *Existing Service Improvement*

The methodology for the improvement of an existing service differs slightly to that for the development of a new service and is described according to the following set of steps:

1. *Create a new Value Articulation Model*
2. *Retrieve the Value Articulation Model* of the previous service version.
3. *Retrieve the Value Improvement Model* produced for the previous service version during the Translation stage (see section 7.6).
4. *Retrieve the Experience Journey Map* of the previous service version that was obtained during the Capture stage (see section 7.5) and use it as an aid to analyse the previously perceived service experience.
5. *Analyse Identified Improved Value Benefit Changes*: Repeat steps three to six in subsection 7.3.2.1 by taking into consideration all the identified *improved* value benefits from the Value Improvement Model as explained in subsection 7.6.1.1.
6. *Analyse Identified New Value Benefit Changes*: Repeat step five by taking into consideration all the identified *new* value benefits from the Value Improvement Model as explained in subsection 7.6.1.2.
7. *Finalise the new Value Articulation Model*.

7.3.3 *Metamodel of the Value Articulation Model*

Figure 17 depicts the metamodel of the Value Articulation Model employed during the Solicitation stage. A Value Articulation Model consists of Service Offering and Touchpoint Offering model elements.

A Service Offering describes the service being offered and is broken down into two types, namely ‘Service Quality Attributes’ as well as ‘Service Value Propositions’, in order to contain a series of Quality Attributes and Value Propositions respectively.

A Touchpoint Offering represents a touchpoint being offered and is used to contain the articulated set of Functional and Non-Functional value benefits. Each Value Benefit can be assigned to a Quality Attribute and one or more Value Propositions.

7.3.4 *Value Articulation Model Example and Model Editor*

ServiceMIF’s graphical model editor support for a Value Articulation Model is shown in Figure 18 based on a continuation of the small *Concierge* example.

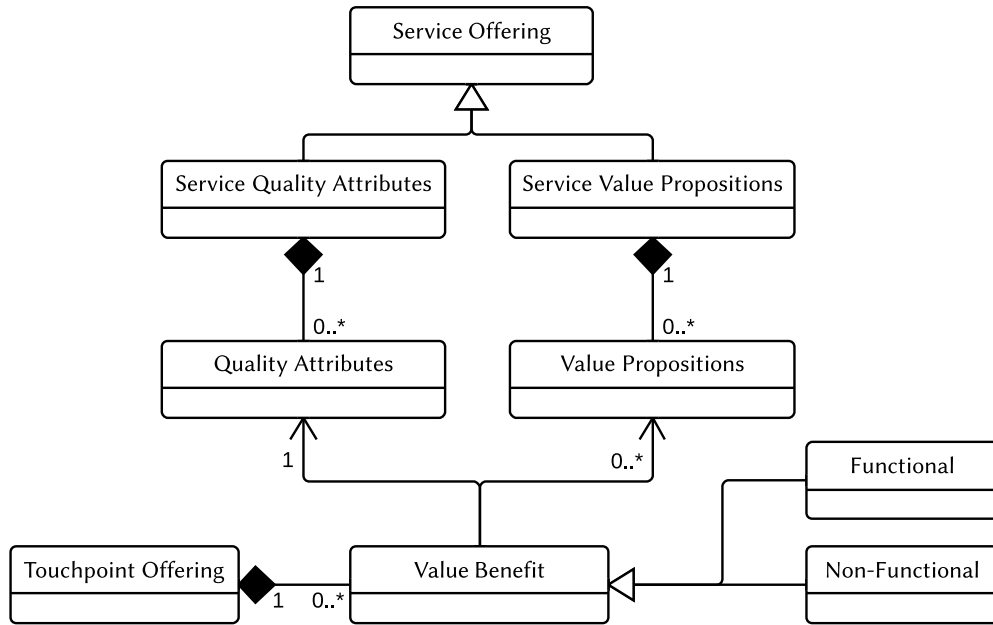


Figure 17: Metamodel of the Value Articulation Model

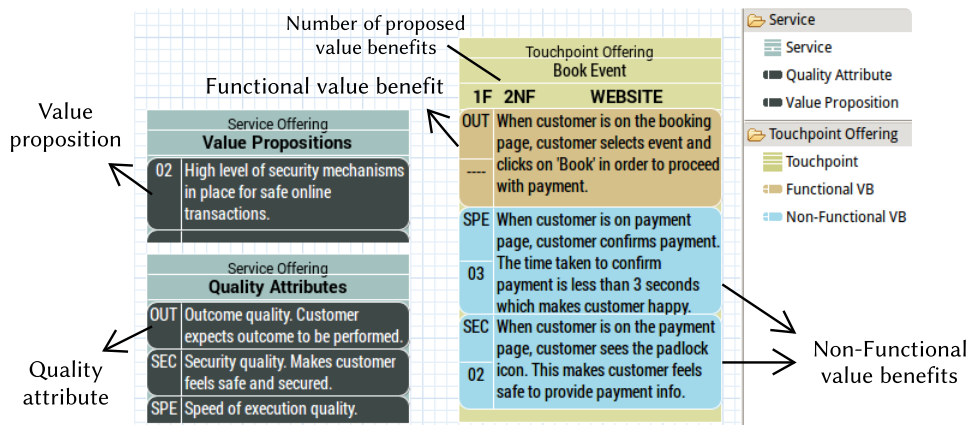


Figure 18: The Value Articulation Model of the Solicitation Stage

Using the Service Journey Map produced in the DIScovery stage (see Figure 15), the ‘Book Event’ touchpoint is shown as a light brown rectangular box with a set of articulated value benefits, namely one functional and two non-functional ones. All the articulated functional and non-functional value benefits are shown as brown and light blue rounded rectangles respectively and can be added to a ‘Touchpoint Offering’. As explained in subsection 6.3.2, each value benefit can be assigned a quality attribute and one or more value propositions. In the latter case, the value proposition tag is marked with ‘***’. If a value benefit, such as the functional one ‘When customer is on the booking page...’, is not assigned to a value proposition, its value proposition tag is shown as ‘---’. Additionally, the count of the total number of proposed functional and non-functional value benefits (‘F’ and ‘NF’ respectively) can be inserted into a ‘Touchpoint Offering’ for easy reference.

In addition to touchpoints, a service or ‘Service Offering’ is represented as a greyish-blue rectangular box. There are two types of ‘Service Offerings’, namely ‘Service Value Propositions’ and ‘Service Quality Attributes’ which were described in subsection 7.3.3 and are used to contain a set of quality attributes and value propositions. The latter are both represented as black rounded rectangles. Some of the service quality attribute tags shown in Figure 18 include ‘OUT’ for outcome, ‘SPE’ for speed of execution, and ‘SEC’ for security. The value proposition numbered ‘02’ can be seen to be assigned to the non-functional value benefit, ‘When customer is on the payment page, customer sees the padlock...’, which exhibits the security quality.

7.4 THIRD DISSECT STAGE: EVALUATION

After a service has been produced and consumed or is being produced and consumed dynamically, customers can provide feedback about the service. The Evaluation, Capture, and Translation stages of DISSECT are meant to address such feedback and identify service innovation opportunities.

The *Evaluation* stage is discussed first and is aimed towards evaluating, from customers’ points of view, whether the proposed value benefits have been experienced or perceived at various points of the service journey as promised by the service provider and its partners. The Evaluation stage is mapped onto the service feedback phase. In this section, the various parts of the Evaluation stage are presented including its principles, methodology, the supporting service model called a *Value Perception Model*, and the tooling support using a small example of the *Concierge* case study.

7.4.1 *Evaluation Stage: Principles*

The Evaluation Stage is built around the principle that a value benefit can only be perceived or created by a customer rather than being “exchanged” to the latter. This notion has been explained in section 4.4. The Evaluation stage aims to obtain customers’ feedback about their service experience at the basic *value benefit level*. Later, the Capture stage will look at customers’ service experience at the *touchpoint and overall service levels*.

In this stage, each value benefit is thus evaluated to determine if it has been perceived by customers according to three possible perception scenarios:

- Fully Perceived,
- Not or Partially Perceived (“Lost”), and
- Perceived but Not Proposed (“Extra”).

7.4.1.1 *Fully Perceived Scenario*

A value benefit is termed as “fully perceived” when its enclosed customer benefit has been perceived or created by customers based on its service context and service action. A fully perceived value benefit for a service provider is

a sign that both its business processes and service personnel are effective in providing that particular value benefit to customers. Thus, a service provider should ensure that all its value benefits are fully perceived by customers.

While not a necessity, a fully perceived value benefit provides opportunities for the service provider to further improve the current offering. This consideration is discussed in the Translation stage in subsection 7.6.1.1.

7.4.1.2 *Not or Partially Perceived (“Lost”) Scenario*

A value benefit that has not or has only been partially perceived by customers is referred to as “lost”. This situation may arise from two possible cases.

The first case, *not perceived*, involves customers not being able to perceive or create the benefit promised in the value benefit due to *quantitative or qualitative discrepancies* assuming that the service context and service action are unchanged. Therefore, the actual benefit perceived is different than the one described in a value benefit. For example, a quantitative discrepancy may be due to customers perceiving webpage loading times of more than five seconds whereas a value benefit promises a period of less than three seconds. An example of a qualitative discrepancy may arise when customers perceive a ‘Low’ level of satisfaction from the outcome of a booking transaction instead of the ‘High’ satisfaction level which was originally proposed and advertised by the service provider.

The second case, *partially perceived*, occurs when the proposed benefit has been perceived in a different service context or using a service action that was not described in the value benefit. In this case, the perception of such a value benefit must be done following its exact service context and service action. Any deviations which affect the predefined service context or service action need to be investigated as this implies that the provision of the benefit is no longer predictable. Hence, a service provider will not be able to promise that the value benefit can be perceived under the conditions described in it.

In both cases, the causes of a value benefit not or partially being perceived by customers need to be investigated and remedial actions taken to solve any problems preventing customers from fully perceiving it. These remedial actions are discussed in the Translation stage in subsection 7.6.1.1.

7.4.1.3 *Perceived but not Proposed (“Extra”) Scenario*

A third value perception scenario relates to a value benefit that is perceived by customers despite not being proposed by a service provider. An “extra” value benefit is one that has had *a genuine impact on the service experience of customers and is articulated from their viewpoints*. The causes for an “extra” value benefit may be due to the following reasons:

- the service provider overlooked the actual value benefit and considered the latter to be not important in the eyes of the customer,
- the value benefit is the unintentional outcome of the tasks performed in one or more provider processes,

- the value benefit has been *indirectly* and *unexpectedly* produced by one or more proposed value benefits.

“Extra” value benefits contribute to the overall value being proposed by a service. Furthermore, they can be potential sources of innovation by encouraging service providers to propose new offerings to their customers. Thus, service providers need to consider whether to formally propose, improve or discard them as discussed in the Translation stage in subsection 7.6.1.1.

7.4.2 Evaluation Stage: Methodology

The methodology of the Evaluation stage is first described for the case of a new service development followed by that for an improvement of an existing service originally developed using the DISSECT approach.

Note that since it is practically difficult to obtain the value perception feedback of all customers for the purpose of this stage, a representative sample of customers should be chosen for the feedback process. *It is recommended that the responses from customers are then recorded on the basis of a simple majority rule with a minimum threshold of fifty percent.* For example, if sixty percent of respondents evaluate a value benefit to have been perceived, then the latter is recorded as being ‘perceived’.

7.4.2.1 New Service Development

During the development of a new service, the Evaluation stage’s methodology consists of a number of steps as outlined in the process model of Figure 19.

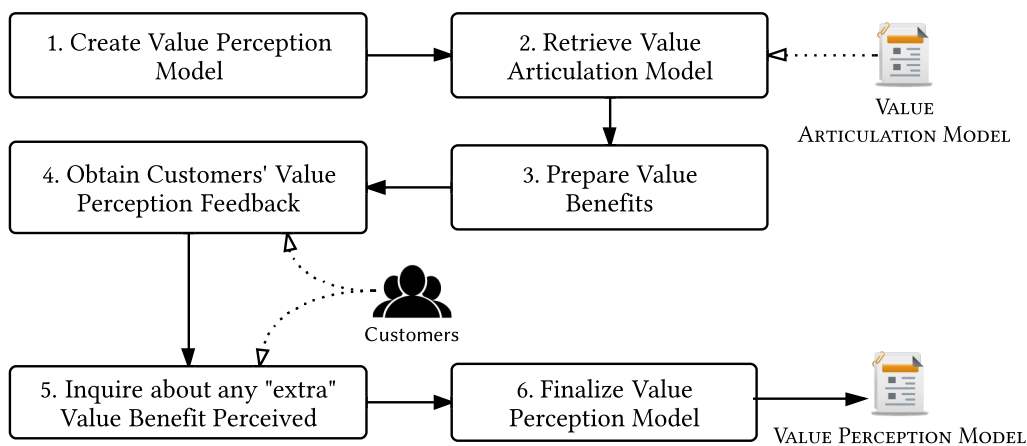


Figure 19: Evaluation Stage Process for New Service Development

These steps are described as follows:

1. *Create Value Perception Model*: An example is shown in subsection 7.4.4 based on the metamodel diagram in subsection 7.4.3. Record generated data from the steps that follow.

2. *Retrieve the Value Articulation Model* produced in the Solicitation stage.
3. *Prepare List of Value Benefits*: Gather the value benefit information about the service and its touchpoints from the Value Articulation Model.
4. *Obtain Customers' Value Perception Feedback*: For each value benefit that is defined in a touchpoint, ask customers about their service experience in terms of whether they have either fully, partially, or not perceived the value benefit. For a *not perceived* value benefit, take note of any quantitative or qualitative discrepancy between the actual perceived benefit and the proposed one.
5. *Inquire about any "extra" Value Benefit Perceived*: If customers have perceived additional value benefits that are not proposed, articulate such value benefits using the value benefit template of subsection 6.3.2.
6. *Finalise the Value Perception Model*.

7.4.2.2 Existing Service Improvement

The same set of steps as outlined in subsection 7.4.2.1 are applicable for the improvement of an existing service.

7.4.3 Metamodel of the Value Perception Model

The Evaluation stage employs a Value Perception Model whose metamodel is depicted in Figure 20.

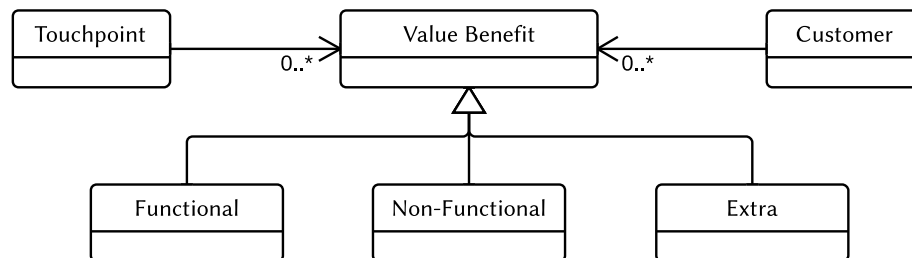


Figure 20: Metamodel of the Value Perception Model

A Value Perception Model consists of several model elements including Touchpoints, Customers, and Value Benefits which can be Functional, Non-Functional, and Extra. Each Touchpoint and Customer can be linked to one or more Value Benefits.

Touchpoints and Customers are linked to Value Benefits depending on the latter's value perception status.

7.4.4 Value Perception Model Example and Model Editor

ServiceMIF's graphical model editor support for a Value Perception Model is shown in Figure 21 based on a continuation of the small *Concierge* example.

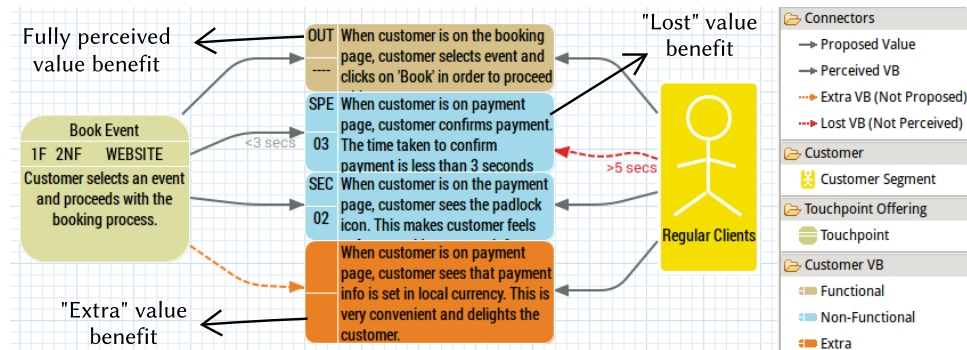


Figure 21: The Value Perception Model of the Evaluation Stage

Using the Value Articulation Model produced in the Solicitation stage (see Figure 18), the functional and non-functional value benefits that were articulated are now going to be evaluated by *Concierge's* regular clients.

As depicted in Figure 21, the functional value benefit, 'When customer is on the... ', is marked as fully perceived as is the case with the non-functional value benefit 'When customer is on the payment page, customer sees the padlock... '. However, the other non-functional value benefit has been partially perceived with customers perceiving a time of more than five seconds (shown as the red dotted arrow) to confirm payment transactions as compared to the three seconds promised by *Concierge*. Thus, this value benefit is regarded as being "lost". Furthermore, there is an "extra" value benefit (shown as an orange rounded rectangle) that was perceived by customers, namely 'When customer is on payment page, customer sees that payment info... '.

To sum up, the Value Articulation Model has revealed that customers were able to fully perceive two value benefits along with an "extra" one while a non-functional value benefit was only partially perceived.

7.5 FOURTH DISSECT STAGE: CAPTURE

Based on the value benefit perception feedback obtained in the previous stage, the fourth DISSECT stage, *Capture*, aims to capture the service experience of customers by analysing their levels of satisfaction of the overall value perceived at both the touchpoint and service levels. The Capture stage takes place in the service feedback phase. In this section, the various parts of the Capture stage are presented including its principles, methodology, the supporting service model called an *Experience Journey Map*, and the tooling support using a small example of the *Concierge* case study.

7.5.1 *Capture Stage: Principles*

In the previous Evaluation stage, customers' experiences were determined by an analysis of whether value benefits in touchpoints have been perceived or not. However, judging customers' experience only by the count of value benefits perceived does not paint the full picture of customers' satisfaction or *emotional attachments* towards a service.

As explained in section 3.3, a service experience conceptually defines the level of satisfaction of the value perceived during service encounters. The Capture stage makes use of two experience indices for capturing customers' satisfaction levels of all the value benefits perceived from each touchpoint and the service as a whole. These two experience indices are known as *Single Touchpoint Experience Index (STEI)* and *Cumulative Touchpoint Experience Index (CTEI)*.

7.5.1.1 *Single Touchpoint Experience Index (STEI)*

The single touchpoint experience index measures *customers' experience or levels of satisfaction of the value perceived from individual touchpoints*. If some customers have had bad service encounters in a particular touchpoint, then the latter may have a poor STEI rating. For example, if customers feel that performing the activities in a touchpoint are too problematic, the latter may receive a negative feedback. Likewise, customers, who have experienced great service encounters or perceived a strong, positive emotional experience in other touchpoints, can award the latter with positive ratings.

Based on the feedback provided by customers during the Evaluation stage, all the "lost" value benefits that they have not been able to perceive in a touchpoint can cause customers to give this touchpoint a negative rating. On the other hand, touchpoints with few "lost" value benefits and additional "extra" ones can gain positive ratings from customers. Note that in real-life scenarios, the number of "lost" and "extra" value benefits does not arbitrarily guarantee whether a touchpoint will be positively or negatively rated. There are other factors that customers weigh in, such as the emotional bond and importance of certain value benefits over others, before they can evaluate their satisfaction levels towards the value of a touchpoint.

From a service provider's perspective, the STEI gives a valuable measure of the business performance being provided by a particular touchpoint. Poorly rated touchpoints constitute pain points whose root causes, such as not or partially perceived value benefits, have to be investigated and actions taken to resolve them. The root causes of such problems can be studied based on a Value Perception Model created in the Evaluation stage. In fact, the next and last stage of DISSECT, Translation, makes use of feedback obtained from both the Evaluation and Capture stages in order to *address the issues faced by customers* during their service journeys.

Six levels of satisfaction have been identified for customers to rate a service experience. These levels range from one to six with one and two being equivalent to a *bad experience*, three and four meaning a *good experience*, and five

Table 7: Experience Ratings and their Service Implications

EXPERIENCE	RATING	CUSTOMER PERCEPTION	TOUCHPOINT IMPACT
Very bad	1	Many major problems encountered. Totally misses expectations.	Highest priority for improvement.
Bad	2	A few major problems encountered. Just misses expectations.	High priority for improvement.
Average	3	Many minor issues encountered. Just meets expectations.	Should be considered for improvement.
Good	4	A few minor issues encountered. Totally meets expectations.	Should be considered for improvement.
Very good	5	A few minor issues encountered. Just exceeds expectations.	Can be considered for improvement.
Outstanding	6	No issues encountered. Totally exceeds expectations.	No need for improvement.

and six being synonymous to a *great experience*. Table 7 provides an overview of these various levels and their business implications in terms of customers' perception of the experience and the improvement impact for a touchpoint.

7.5.1.2 Cumulative Touchpoint Experience Index (CTEI)

The concept of a cumulative touchpoint experience index is different to that of a STEI. Instead of measuring customers' experience of a single touchpoint, a cumulative touchpoint experience index captures *customers' experience of a touchpoint based on the accumulated experiences of other touchpoints that are part of the service journey encountered so far*. Based on the CTEI ratings, poorly rated parts of a customer's service journey, which consist of a collection of consecutive touchpoints, can be easily identified.

The CTEI is based on the notion that while each touchpoint should provide maximum satisfaction to customers, the focus of attention should be on the customer's end-to-end journey by taking into account the experiences of one or more touchpoints together as described in section 3.3.

The aim of a CTEI rating is not to obtain an average of a group of STEI ratings nor is it to measure if all the value benefits have been fully perceived from touchpoints. The aim is rather to *determine if there are any problems or gaps in the service delivery or with the proposed value benefits*. In consequence, a cumulative touchpoint experience index can help in the identification of provider processes which need to be optimised or improved since the latter are responsible for supporting customer interactions across touchpoints.

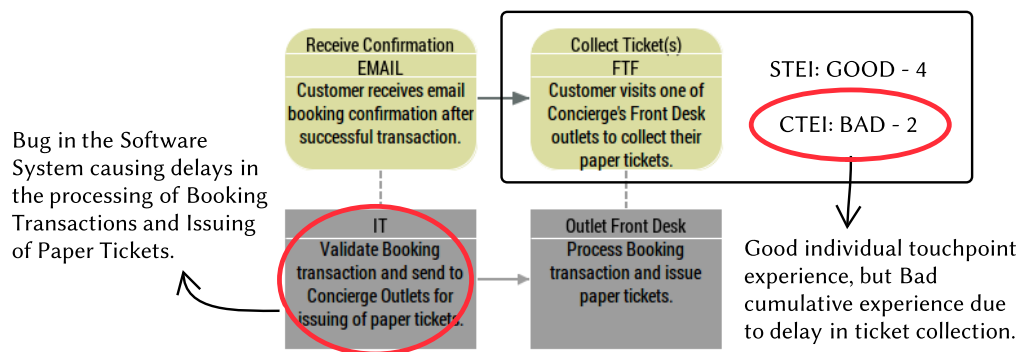


Figure 22: Example of a Touchpoint with low CTEI rating

As an example, consider Figure 22 which depicts a simple scenario whereby customers have rated the touchpoint, 'Collect Ticket(s)', with a CTEI rating of two despite perceiving a good experience from it with a STEI rating of four. The cause for the low CTEI rating was due to customers having to wait for more than a week before they could go and collect their tickets at one of *Concierge's* service counters. Upon closer inspection with service personnel, the delays were occurring because of a problem with the service delivery – more specifically with the provider process 'Validate Booking transaction...' which is in charge of processing and dispatching confirmation requests to the service counters. It was found that a bug in the software booking system mechanically sent these confirmation requests late, only for orders with four or more tickets, to the service counters. Based on customer complaints, the problem was identified and a patch was applied to fix the buggy software system and resolve the issue which resulted in customers upgrading their CTEI rating for the touchpoint.

Note that the cumulative touchpoint experience index makes use of the same six-point scale defined in Table 7 to determine the level of satisfaction of customers towards a group of touchpoints.

7.5.2 Capture Stage: Methodology

The methodology for the Capture stage is first described for the case of a new service development followed by that for an improvement of an existing service originally developed using the DISSECT approach.

Note that the same representative sample of customers which provided feedback during the Evaluation stage can also be used to repeat the feedback process required in this stage. *Responses from customers are thus recorded on the basis of a simple majority rule with a minimum threshold of fifty percent.* For example, if eighty percent of respondents determine that a touchpoint should be given a STEI rating of five, then the latter is recorded for that touchpoint.

7.5.2.1 New Service Development

During the development of a new service, the methodology for the Capture stage consists of a number of steps outlined in the process model of Figure 23.

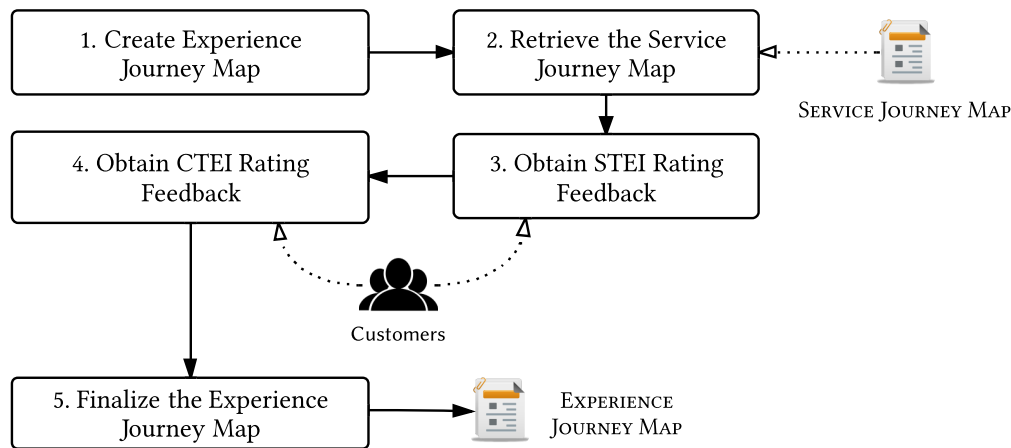


Figure 23: Capture Stage Process for New Service Development

The steps, shown in Figure 23, are described as follows:

1. *Create Experience Journey Map*: An example is shown in subsection 7.5.4 based on the metamodel diagram in subsection 7.5.3. Record generated data from the steps that follow.
2. *Retrieve the Service Journey Map* produced in the DIScovery stage.
3. *Obtain STEI Rating Feedback*: For each touchpoint present in the Service Journey Map, ask customers to give a STEI rating based on their levels of satisfaction of the value perceived from the individual touchpoint.
4. *Obtain CTEI Rating Feedback*: Repeat step three for the CTEI rating feedback. For each touchpoint present in the Service Journey Map, ask customers to provide a CTEI rating based on their accumulated experiences obtained from touchpoints since the start of their service journey up to the touchpoint in question.
5. *Finalise the Experience Journey Map*.

7.5.2.2 Existing Service Improvement

The same set of steps as outlined in subsection 7.5.2.1 are applicable for the improvement of an existing service.

7.5.3 Metamodel of the Experience Journey Map

The Capture stage makes use of an Experience Journey Map whose metamodel is shown in Figure 24.

An Experience Journey Map is based on the Service Journey Map with similar model elements including Service Stages and Touchpoints which form part of a particular Service Stage.

A Touchpoint can point to three Experience Bands, namely 'BAD', 'GOOD', and 'GREAT', to indicate its STEI and CTEI ratings. Moreover, a Touchpoint can be linked to one or more other Touchpoints along the service journey.

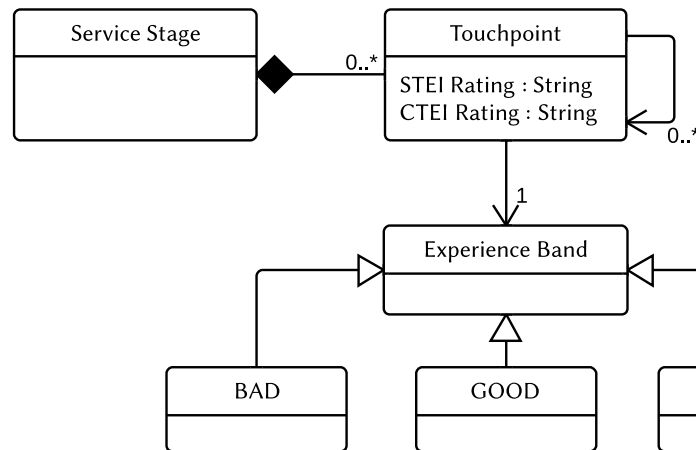


Figure 24: Metamodel of the Experience Journey Map

7.5.4 Experience Journey Map Example and Model Editor

ServiceMIF's graphical model editor support for an Experience Journey Map is shown in Figure 25 based on a continuation of the small *Concierge* example.

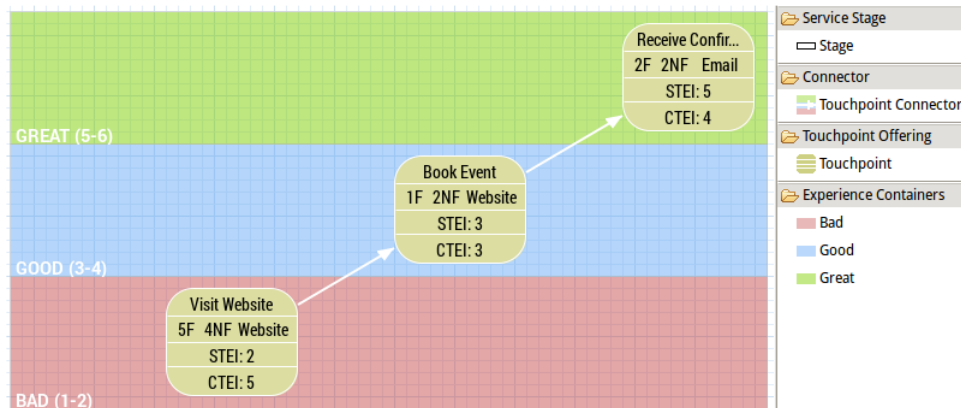


Figure 25: The Experience Journey Map of the Capture Stage

An Experience Journey Map contains three experience bands which are all rectangular in shape and painted red, blue, and green for representing 'BAD', 'GOOD', and 'GREAT' respectively. Each experience band can represent two possible experience ratings based on customers' levels of satisfaction which can range from one to six as explained in subsection 7.5.1.

Using the Service Journey produced in the DIScovery stage (see Figure 15), the service experience of customers is captured based on their STEI and CTEI ratings for single touchpoints and for parts of the service journey.

As shown in Figure 25, another touchpoint, 'Visit Website', has been added to the list of two touchpoints present in the Service Journey Map. Each touchpoint features a specific STEI and CTEI rating. For example, the 'Visit

Website' touchpoint has a STEI rating of two while its CTEI rating is five. This indicates that customers did not like the experience being proposed via the 'Visit Website' touchpoint – possibly due to problems they faced while browsing *Concierge's* website. On the other hand, a CTEI rating of five might be due to customers' great experience hearing about *Concierge*, for instance, from friends prior to visiting the website. Due in part to the bad experience perceived from the 'Visit Website' touchpoint, customers awarded the next touchpoint with a lower CTEI rating of three which indicates how customers' cumulative experiences *may change* over time along a service journey.

For instance, the last touchpoint, 'Receive Confirmation', illustrates how customers' CTEI rating was upgraded as they perceived a better touchpoint experience from both 'Book Event' and 'Receive Confirmation'.

7.6 FIFTH DISSECT STAGE: TRANSLATION

The *Translation* stage marks the culmination of efforts spent in the last four DISSECT stages in order to identify opportunities for fulfilling ServiceMIF's service innovation and improvement goal. The Translation stage occurs in the service feedback phase. This section presents the various parts of the Translation stage including its principles, methodology, the supporting service model called a *Value Improvement Model*, and the tooling support using a small example of the *Concierge* case study.

7.6.1 *Translation Stage: Principles*

The Translation stage is the last stage of the DISSECT approach whose goal is composed of three objectives for improving a service at *three interaction levels, namely the value benefit, touchpoint, and overall service*. These improvement objectives are designed to satisfy the identified service innovation requirements discussed in chapter 5.

Each improvement objective consists in analysing responses gathered from customers during the Evaluation and Capture stages and translating them into improvement opportunities with the participation of customers again.

The identification of these improvement opportunities is important so as to help service developers align customer needs with service offerings during the next executions of the DIScovery and Solicitation stages for developing the next version of the service.

It is important to note that each improvement opportunity suggested by customers during this stage does not need to be verified since each will be discussed during the next executions of the DIScovery and Solicitation stages and verified according to each stage's aim outlined in subsection 7.2.1 and subsection 7.3.1 respectively.

7.6.1.1 *Value Benefit Improvement Objective*

The value benefit improvement objective consists in identifying opportunities for proposing improved value benefits in the next version of a service.

Three such improvement opportunities have been identified and termed as follows:

- Value Benefit *Addition*: refers to an “extra” value benefit (see subsection 7.4.1.3) that customers would like to be officially proposed.
- Value Benefit *Modification*: refers to an existing value benefit which has one or more of its components, including the service context or service action or customer benefit, modified.
- Value Benefit *Removal*: refers to an existing value benefit that customers would like to be removed and *not* officially proposed anymore.

These three value benefit improvement opportunities constitute the list of actions that can be taken on the value benefits of a service. There is a *fourth* value benefit improvement opportunity which consists in basically taking no action on a value benefit which implies that the latter can be considered to be proposed again in its current form in the next version of the service.

In subsection 7.4.1, value benefits were described to be fully perceived; not or partially perceived (“lost”); and perceived but not proposed (“extra”). Based on the value perception outcome of each value benefit present in the Value Perception Model produced in the Evaluation stage, the appropriate improvement opportunities must be identified *with the help of customers*.

FULLY PERCEIVED VALUE BENEFIT A fully perceived value benefit can be improved according to three improvement opportunities: value benefit modification, value benefit removal, and taking no action on it.

The *modification* of a fully perceived value benefit occurs when customers are not fully satisfied with one or more components of the value benefit and would like to bring changes to them. For example, the service context component may not accurately capture the state in which customers perceive the benefits. Another reason can be due to an issue faced with the service action component that does not describe the right set of operations involved. Lastly, customers may wish that the benefit perceived is different than the current one. As a practical example, consider the following functional value benefit:

“When customer is on the payment page, customer clicks on ‘confirm’ button so as to proceed with the transaction payment.”

A possible modification to the latter could be to describe a different benefit:

“When customer is on the payment page, customer clicks on ‘confirm’ button so as to get a confirmation page of the transaction before proceeding with the transaction payment.”

The *removal* of a fully perceived value benefit is due to customers finding it unnecessary to be offered because of its limited significance to their service experience. This statement implies that the removal of such a value benefit will not have an impact on touchpoints’ STEI and CTEI ratings.

The last improvement opportunity for a fully perceived value benefit is concerned with leaving it as it is without any modification. If customers do not require any modifications or removal operations to be made on the value benefit, then the latter is a good candidate to be offered again in the next version of the service.

Questions that can help identify improvement opportunities for a fully perceived value benefit include the following:

- Value Benefit *Modification*
 - Would you like to address any issues or problems faced with the value benefit?
 - How can we ensure that the value benefit is contributing to a *better* touchpoint and service experience?
- Value Benefit *Removal*
 - Has the value benefit *negatively* impacted your service experience?
 - Would the touchpoint experience ratings be *negatively* impacted if this value benefit is not proposed anymore?

NOT OR PARTIALLY PERCEIVED VALUE BENEFIT A not or partially perceived (“lost”) value benefit presents itself as a warning sign for which the service provider should provide remedial actions as mentioned in subsubsection 7.4.1.2. Two improvement opportunities are possible, namely value benefit modification and value benefit removal.

The *modification* of a not or partially perceived value benefit is performed because customers have not fully perceived it. Consequently, customers have to point out the changes to be made *either to the service or to the description of the value benefit such that they would then be able to fully perceive it*. For example, consider the following non-functional value benefit of *Concierge*:

“When visiting Concierge’s website, customer clicks on several webpages. Customer witnesses 2-second page loading times on average.”

Since customers are perceiving average page loading times of five seconds instead of the promised two, a possible modification of the value benefit could be the following (assuming customers are willing to witness the five-second average page loading times):

“When visiting Concierge’s Website, customer clicks on several webpages. Customer witnesses 5-second page loading times on average.”

Another modification could be that customers insist on perceiving the originally promised two-second average page loading times and thus require that the service provider makes changes to the service in order to be able to satisfy their need.

The *removal* of a not or partially perceived value benefit follows the same principle adopted for a fully perceived value benefit as discussed before. Moreover, the same set of questions can be asked to customers to ensure that

the removal of a not or partially perceived value benefit will not impact on the service experience of customers.

Questions that can help identify improvement opportunities for a not or partially perceived value benefit include the following:

- Value Benefit *Modification*
 - What were the issues you encountered for *not fully* perceiving the value benefit?
 - Do you still want to perceive the original value benefit or can we change it to reflect the current state of its perceived components?
- Value Benefit *Removal*
 - Has the value benefit *negatively* impacted your service experience?
 - Would the touchpoint experience ratings be *negatively* impacted if this value benefit is not proposed anymore?

PERCEIVED BUT NOT PROPOSED VALUE BENEFIT As discussed in sub-subsection 7.4.1.3, a perceived but not proposed (“extra”) value benefit is one that has had a genuine impact on customers’ service experience and can become a potential source of innovation for the service provider. To leverage the beneficial aspects of an “extra” value benefit, two improvement opportunities have been identified: value benefit addition and value benefit modification.

The *addition* of an “extra” value benefit signifies that customers are satisfied with the benefit perceived and want the value benefit to be officially recognised and proposed. From a service provider’s perspective, the addition of an “extra” value benefit involves treating it as an officially proposed value benefit and thus making sure that business resources are properly allocated to ensure the value benefit can be offered.

The *modification* of an “extra” value benefit follows the same logic used for a fully perceived value benefit since, by definition, an “extra” value benefit can be regarded as a value benefit that is fully perceived by customers. Thus, an “extra” value benefit is modified because customers are not fully satisfied with one or more of its components. After the “extra” value benefit has been modified, it can be added to the list of officially proposed value benefits.

Questions that can help identify improvement opportunities for a perceived but not proposed value benefit include the following:

- Value Benefit *Addition*
 - Has the value benefit *positively* impacted your service experience?
 - Would the touchpoint experience ratings be *positively* impacted if this value benefit is not proposed anymore?
- Value Benefit *Modification*
 - How can we ensure that the value benefit is contributing to a *better* touchpoint and service experience?

In summary, Table 8 illustrates the various improvement opportunities for a value benefit depending on how it is perceived by customers.

Table 8: Value Benefit Improvement Opportunities

PERCEPTION LEVEL	IMPROVEMENT OPPORTUNITY			
	Addition	Modification	Removal	None
Fully Perceived		✓	✓	✓
Not or Partially Perceived		✓	✓	
Perceived but Not Proposed	✓	✓		

7.6.1.2 Touchpoint Improvement Objective

The touchpoint improvement objective involves having an overview of the value perceived from each touchpoint and identifying *touchpoint modification opportunities* in terms of making *additional changes* to value benefits.

Based on customers' assistance, service developers must investigate opportunities to upgrade the STEI rating of each touchpoint as depicted in the Experience Journey Map produced in the Capture stage. For example, if a touchpoint is given a STEI rating of two, customers must be asked about the changes that could be implemented on the touchpoint's value offerings in order for them to award a better experience rating of 'GOOD' and 'GREAT'.

Apart from the addition, modification, and removal of value benefits, some customers can also propose to articulate *new value benefits* which they would like to perceive or create during their service experience. These new value benefits can serve to fulfil *missing* customer needs that can improve customers' satisfaction of touchpoints present in a Service Journey Map.

7.6.1.3 Service Improvement Objective

The service improvement objective of the Translation stage focuses on the improvement of customers' service experience across touchpoints for the entire service journey or parts of it.

Based on the CTEI ratings of touchpoints in the Experience Journey Map created in the Capture stage, customers can express their concerns about gaps or problems they have encountered with the service delivery or with the proposed value benefits. Using a similar approach as that adopted for the touchpoint improvement objective described in subsection 7.6.1.2, the service developers must investigate opportunities to upgrade each touchpoint's CTEI rating along a service journey or parts of it with the help of customers. These service improvement opportunities consist in the creation of new touchpoints as well as the modification and removal of existing ones.

THE CREATION OF NEW TOUCHPOINTS can be attributed to customers willing to have additional service encounters that better connect touchpoints together and enhance their end-to-end service experience. A Service Journey Map can be used to redesign the service journey based on customers' inputs.

THE MODIFICATION OF EXISTING TOUCHPOINTS is concerned with the identification of additional touchpoint modification opportunities, based on the articulation, addition, modification, and removal of value benefits, which were previously not identified during the previous value benefit and touchpoint improvement exercises. Consider the 'Collect Ticket(s)' touchpoint example of Figure 22 in subsection 7.5.1.2.

After customers have expressed their dissatisfaction about the length of time taken before they can go and collect event tickets, a new non-functional value benefit can be created in the 'Collect Ticket(s)' touchpoint to specifically focus on the need for a reduced time collection period. An example of such a non-functional value benefit can be the following: "After booking transaction has been successfully completed, the system sends the booking information to the ticketing outlets. Customer can go and collect the booked tickets at the ticketing outlets after a two-business day processing period." This new value benefit may then cause the service provider to investigate and analyse any problems with the service delivery including the bug in the software booking system.

THE REMOVAL OF EXISTING TOUCHPOINTS can occur if customers feel that one or more touchpoints are not necessary and can thus be safely removed without impacting the STEI and CTEI ratings of other touchpoints.

7.6.2 Translation Stage: Methodology

The methodology for the Translation stage is first described for the case of a new service development followed by that for an improvement of an existing service originally developed using the DISSECT approach.

Note that the same representative sample of customers which provided feedback during the Evaluation and Capture stages can also be used to repeat another feedback process for the purpose of this stage. *Responses from customers are thus recorded on the basis of a simple majority rule with a minimum threshold of fifty percent.* For instance, if fifty-five percent of respondents propose a particular improvement opportunity such as the removal of a fully perceived value benefit or the creation of a touchpoint, then these responses must be recorded by service developers. Note that the role of the latter is also to *facilitate* customers in articulating new and improved value benefits.

7.6.2.1 New Service Development

During the development of a new service, the methodology for the Translation stage consists of a number of steps as outlined in the process model of Figure 26. These steps are described as follows:

1. *Create Value Improvement Model:* Based on the example shown in subsection 7.6.4 and the metamodel diagram in subsection 7.6.3. Record generated data from the steps that follow.
2. *Retrieve the Value Perception Model* produced in the Evaluation stage.

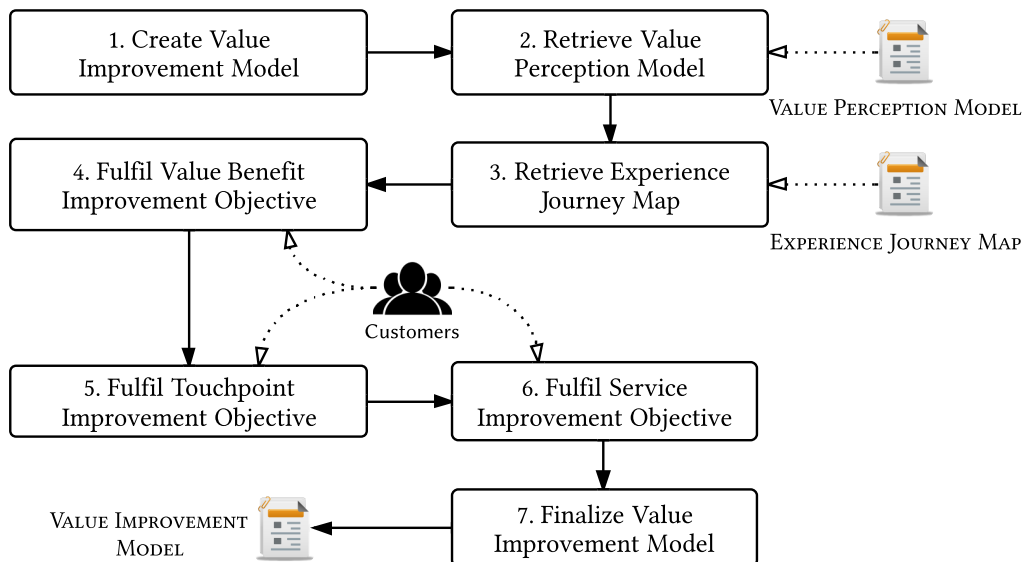


Figure 26: Translation Stage Process for New Service Development

3. *Retrieve the Experience Journey Map* produced in the Capture stage.
4. *Fulfil Value Benefit Improvement Objective* using the Value Perception Model and customers' feedback.
 - a) For each fully perceived, not or partially perceived ("lost"), and perceived but not proposed ("extra"), identify possible improvement opportunities based on the questions outlined in subsection 7.6.1.1 for a fully perceived value benefit.
 - b) Assist customers in the formulation of value benefits.
5. *Fulfil Touchpoint Improvement Objective* based on the Value Perception Model and the Experience Journey Map. For each touchpoint, based on customer feedback, identify if any new value benefits need to be articulated or if any existing value benefits need to be added, modified, or removed to upgrade the STEI rating of the touchpoint as explained in subsection 7.6.1.2.
6. *Fulfil Service Improvement Objective* using the Value Perception Model and the Experience Journey Map.
 - a) Based on customer feedback, identify if new touchpoints need to be created or if any existing ones need to be modified or removed as explained in subsection 7.6.1.3 so as to upgrade the CTEI ratings of the touchpoints.
 - b) Record any touchpoint creation and removal opportunities on a Service Journey Map.
 - c) Record all the possible touchpoint modification opportunities on the Value Improvement Model.
7. *Finalise Value Improvement Model.*

7.6.2.2 Existing Service Improvement

The same set of steps as outlined in subsection 7.6.2.1 are applicable for the improvement of an existing service.

7.6.3 Metamodel of the Value Improvement Model

The Translation stage makes use of a Value Improvement Model whose meta-model is depicted in Figure 27. A Value Improvement Model consists of Touchpoint Offering and Touchpoint Improvement elements. A Touchpoint Offering represents a touchpoint that contains Offered Value Benefits of type Functional, Non-Functional, and Extra which have been evaluated during the Evaluation Stage. On the other hand, a Touchpoint Improvement represents a touchpoint with Improved Value Benefits, namely ‘Articulated’, ‘Modified’, and ‘Added’ as identified based on customer feedback.

An Extra Value Benefit in a Touchpoint Offering can be linked to an Added Value Benefit in a Touchpoint Improvement if customers wish that the value benefit is officially recognised and proposed. A Functional or Non-Functional value benefit in a Touchpoint Offering can be linked to one or more Modified Value Benefits contained in a Touchpoint Improvement if customers have identified ways to modify and improve the value benefit. Lastly, a new Articulated Value Benefit can be inserted into a Touchpoint Improvement element.

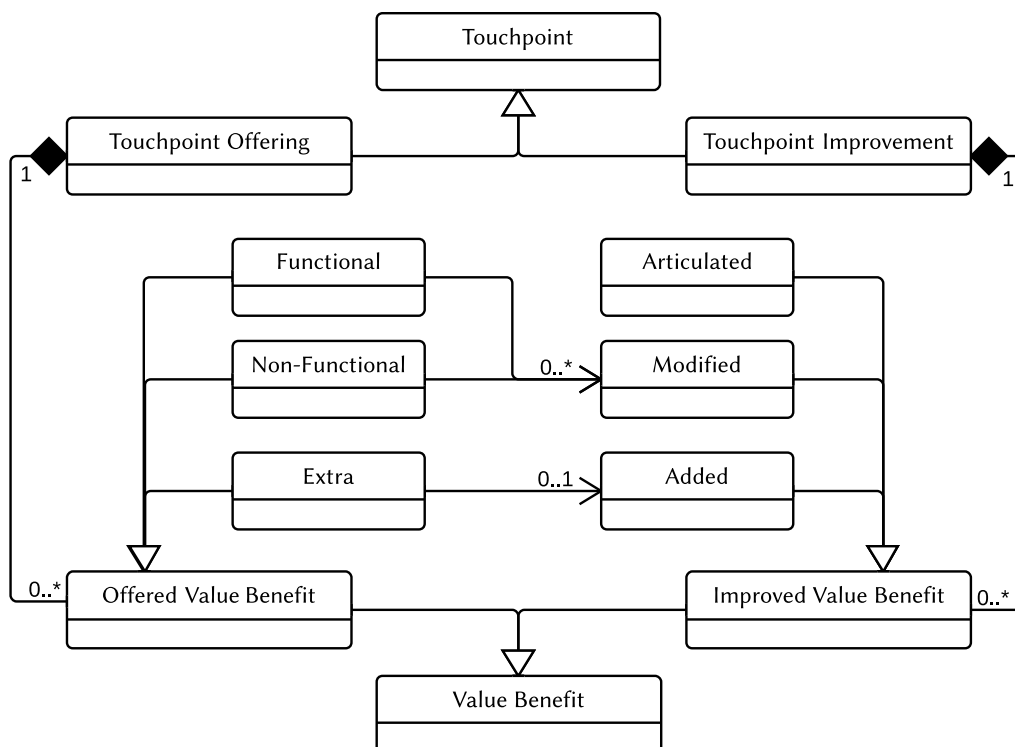


Figure 27: Metamodel of the Value Improvement Model

7.6.4 Value Improvement Model Example and Model Editor

ServiceMIF's graphical model editor support for a Value Improvement Model is shown in Figure 28 based on a continuation of the small *Concierge* example. The four value benefits which were evaluated during the Evaluation stage

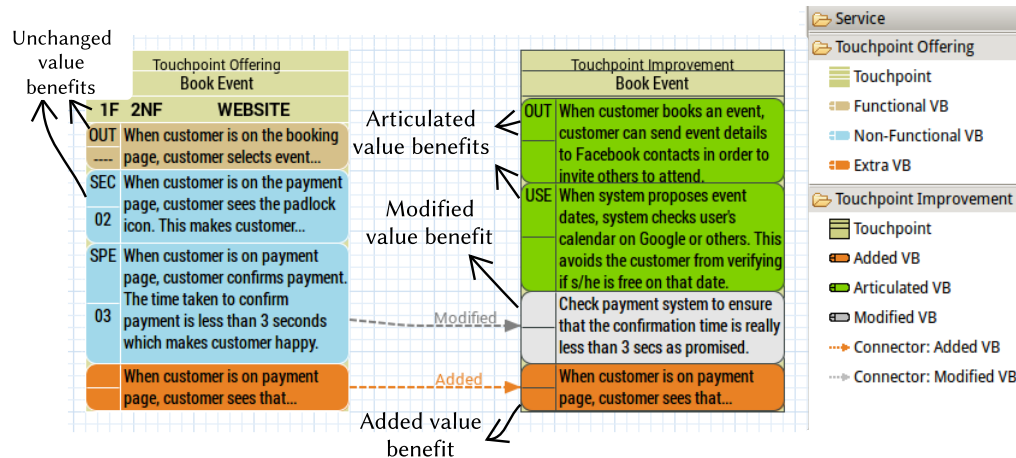


Figure 28: The Value Improvement Model of the Translation Stage

(see subsection 7.4.4) are now shown in a ‘Touchpoint Offering’ which is a light brown rectangular box shown on the left side of Figure 28. No action will be taken on the first two value benefits since they are left unchanged – probably due to customers having fully perceived them and having not identified ways to further improve them.

The third value benefit, ‘When customer is on payment page, customer confirms payment...’, however, was not fully perceived by customers. Thus, this “lost” value benefit needs to be *modified* (e.g., by identifying the cause(s) of the non-perceived benefit – refer to subsection 7.4.1.2) for customers to perceive the promised payment confirmation time of less than three seconds. A note to implement this *value benefit modification*, namely ‘Check payment system to ensure that the confirmation time...’, has been written in a ‘modified’ value benefit (shown as a light grey rounded rectangle in ‘Touchpoint Improvement’). If no note is necessary, the description of the “lost” value benefit can be copied over to the ‘modified’ value benefit.

The “extra” value benefit (shown in orange) now becomes an ‘added’ value benefit in ‘Touchpoint Improvement’ indicating that customers would like this value benefit to be officially proposed in the next version of *Concierge*. In addition to the ‘modified’ and ‘added’ value benefits, two new value benefits (shown in green) have been articulated for the ‘Book Event’ touchpoint. These new ‘articulated’ value benefits can contribute to the outcome and usability quality of *Concierge*. Whether these four *improved value benefits* will be offered by *Concierge* in its next version depends on the criteria for articulating value benefits as defined in the Solicitation stage (see subsection 7.3.2.2).

GRAPHICAL MODEL EDITOR TOOL FOR SERVICEMIF

This chapter effectively concludes the discussion on the development and implementation of ServiceMIF. This chapter discusses the essential aspects, including the choice and requirements of the development platform; a basic tool walk-through; and an illustration of the implemented code, of the set of ServiceMIF model editors that were developed to support the modelling requirements of the five DISSECT stages.

8.1 DEVELOPMENT PLATFORM REQUIREMENTS AND SELECTION

The development of graphical model editors that enable the creation of the ServiceMIF service models is required since there is presently no tool that is available for creating these service models. For the purpose of the thesis, the implementation of a graphical model editor tool will serve more as a simple prototype rather than a full-fledged application to support the creation of the five service models used in the DISSECT stages. Consequently, the following requirements have been identified for choosing the software or development platform:

- Supports the development of graphical model editors based on domain models or metamodels.
- Allows the creation of graphical model elements of various shapes, sizes, and colours.
- Is well documented and supported through tutorials, user forums, and so on.
- Cross-platform (i.e., can be operated on multiple computer platforms such as Linux, Microsoft Windows, and Mac OS X) and preferably free and open-source.
- Is being actively developed and maintained.
- Provides mechanisms for model element extraction and transformation for future needs.

Based on these requirements, the Graphiti framework [30] was selected as the development platform. The Graphiti framework allows the creation of

highly sophisticated graphical editors and fulfils all the model editor requirements described previously. Furthermore, the development of model editor code using the Graphiti framework can be made simpler and faster with the Spray DSL [59] taking care of automatically generating repetitive code for model manipulation.

Other tool candidates that were considered but failed to meet one or more of the listed requirements include Eclipse GMF [28] and EuGENia [24].

8.2 TOOL WALK-THROUGH

The interface of the ServiceMIF model editor tool is shown in Figure 29 for the Value Perception Model that is used in the Evaluation stage of DISSECT.

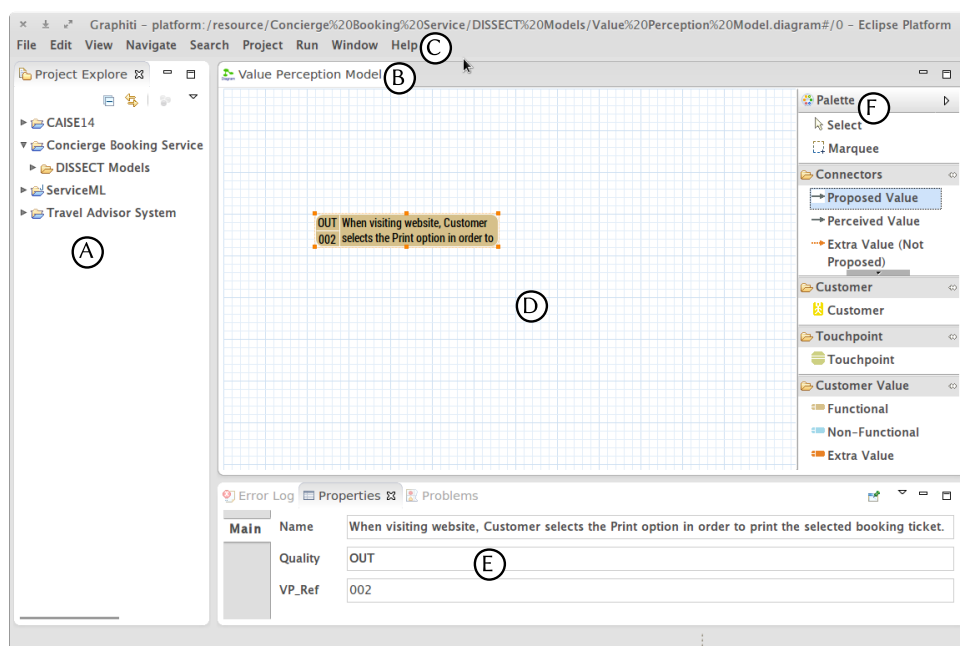


Figure 29: ServiceMIF Graphical Model Editor Tool

A description of each of the main components of the model editor, which have been highlighted from A to F, is given below:

- A. Project Explorer: Contains projects, folders, and the service model files. Each model file features a specific file extension as shown in Table 9.
- B. Model Tab: Shows the currently opened service models for editing.
- C. Toolbar: Lists the available menus and commands which form part of the Graphiti framework. The most useful ones for a user are the 'File', 'Edit', and 'View' menus.

Table 9: File Extensions of the Service Models

EXTENSION	SERVICE MODEL
.sjm	Service Journey Map
.vam	Value Articulation Model
.vpm	Value Perception Model
.ejm	Experience Journey Map
.vim	Value Improvement Model

- D. Drawing Area: The actual drawing area where model elements can be added, modified, deleted, and linked to one another.
- E. Properties Sheet: Contains all the editable information about a service model element.
- F. Palette: Provides all the available elements for a service model that can be placed onto the drawing area and edited.

8.3 CODE ILLUSTRATION

The development of a graphical model editor using the Spray DSL and the Graphiti framework requires the creation of an Eclipse Ecore Model (.ecore) for the definition of a service model's metamodel. Afterwards, the development tasks include the implementation of three code files, namely a Shape Model (.shape) for defining the shape of a model element, a Spray Model (.spray) for defining the relationship between a Shape Model and an Ecore Model (.ecore), and a Style Model (.style) for defining the shape properties such as size and colour.

Based on the Value Perception Model shown in subsection 7.4.4, its Ecore Model along with examples of three Spray code definitions for a functional value benefit are illustrated in the appendix as noted below:

- Ecore Model: refer to section A.1.
- Shape, Spray, and Style Models: refer to section A.2.

III

RESULTS AND EVALUATION

SERVICEMIF EXPERIMENT

This chapter addresses this thesis' seventh research objective and discusses the experiment performed using ServiceMIF based on the *Concierge* case study. The results of the experiment are reported and the experiment findings as well as the evaluation of ServiceMIF are given at the end of the chapter.

9.1 THE CONCIERGE CASE STUDY

A case study involving an event booking service called *Concierge* will be used for evaluating ServiceMIF's service innovation potential based on the set of requirements identified in chapter 5. The *Concierge* event booking service is provided by a fictitious start-up company, known as Concierge International, whose business model is shown in Figure 30 using a Business Model Canvas. Concierge International enables its 'regular clients' and 'busy customers' to book tickets for a wide variety of entertainment-related events such as music concerts/festivals, theatre plays, movies, and so on.

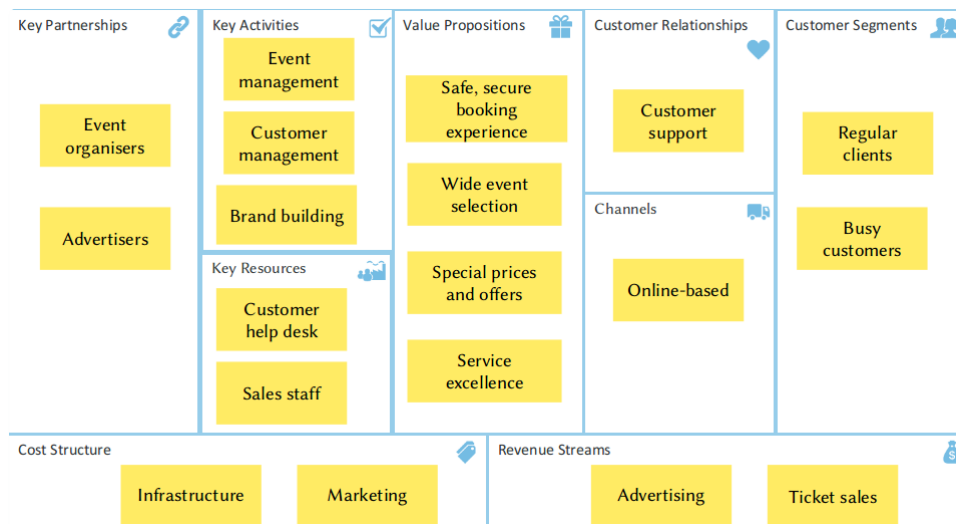


Figure 30: Concierge's Business Model

As shown in Figure 30, the company has partnered with event organisers to ensure that its *Concierge* service can propose tickets for all the major events happening in Norway. Concierge International is also confident that it will be able to differentiate itself from the competition by pricing tickets at a low price, ensuring a safe and pleasant online booking experience, and offering support by highly trained help desk personnel.

9.2 EXPERIMENT SETUP

Using the *Concierge* event booking service, an experiment was designed to evaluate the claims and implications of ServiceMIF towards its service innovation capabilities. A trial group was created with the participation of two PhD students and one Master student from the University of Oslo studying service design and informatics respectively. Although the use of the service was not real, participants were asked to imagine being in the role of a service developer and customers and perform the experiment according to the value development methodology, DISSECT, described to them.

All the three trial users have a good conceptual understanding of the development aspects of a service having followed service modelling courses at the university with the two PhD students having also published research papers in the service design field. The trial group was given a presentation about the principles surrounding the DISSECT approach and service models to fulfil the service innovation requirements as discussed in chapter 5.

The participants were provided with the business model of *Concierge* shown in Figure 30 that contains various elements regarding how the business would be operating its event booking service. The trial users were then asked to develop the service to satisfy the needs of *Concierge* and its customers by following the methodology of the DISSECT approach and the use of the various supporting service model editors. Afterwards, participants were told to use the approach and editors again for a second time to simulate the improvement of an existing version of *Concierge*. The participants were asked to save the service models produced at each DISSECT stage and record any issues or problems encountered during both runs of DISSECT. Only blocking issues that forced them to get stuck at a particular step were resolved as these were discovered.

During the entire exercise which was performed as a half-day workshop, one of the participants played the role of the *service developer* while the other two candidates represented the *regular clients'* customer segment of *Concierge*. The steps that the participants had to perform for each DISSECT stage are summarized as follows:

1. Understand the principles and methodology given for the stage.
2. Execute the steps of the stage's methodology depending on whether it is for a new *Concierge* service development or an improvement of *Concierge*.
3. Create the stage's service model and note down any issues encountered.

4. Move on to the next stage and repeat the process until the final stage is completed.

9.3 RESULTS OF THE EXPERIMENT

After the experiment was carried out, the service models produced and any issues encountered were analysed and discussed with all the participants. The results of the experiment for each DISSECT STAGE are presented in the following subsections.

9.3.1 *DIScovery Stage Results*

In the DIScovery stage, the participants had to create a Service Journey Map by identifying touchpoints and provider processes required to describe the service journey of both customers and the provider and its network partners.

The identification of touchpoints did not pose any problem for the participants since all three of them are familiar with the concept of a traditional customer journey map. However, the allocation of provider processes proved to be a bit challenging at the beginning. A BPMN activity diagram that was created to model the provider's activities for the service was used to identify individual provider processes, but participants were left confused regarding how to logically create such processes. The task was made easier with the help of a service blueprint whereby the activities that were directly linked to support the execution of a touchpoint were grouped into one or more provider processes. The participants also created two personas to describe their regular client's customer segment.

9.3.1.1 *New Concierge Service Development*

The first execution of the DIScovery stage for a new development of *Concierge*, based on the methodology described in subsection 7.2.2, was associated with the traditional method of designing services based on a combination of various design techniques. As such, its importance for service innovation was not evident for the participants. The Service Journey Map that was created is shown in Figure 31.

9.3.1.2 *Existing Concierge Service Development*

The second execution of the DIScovery stage for improving *Concierge* proved to be more conclusive in terms of being able to identify service innovation opportunities. Based on the methodology described in subsection 7.2.2.2, the Experience Journey Map of Figure 34 as well as the service improvement opportunities obtained during the Translation stage of the previous DISSECT execution (see subsection 9.3.5.1) showed that the 'Collect Tickets' touchpoint was becoming unnecessary and needed to be removed. The reason was because all the customers were now willing to receive tickets by post instead of having to personally collect them at one of *Concierge's* shop partners.

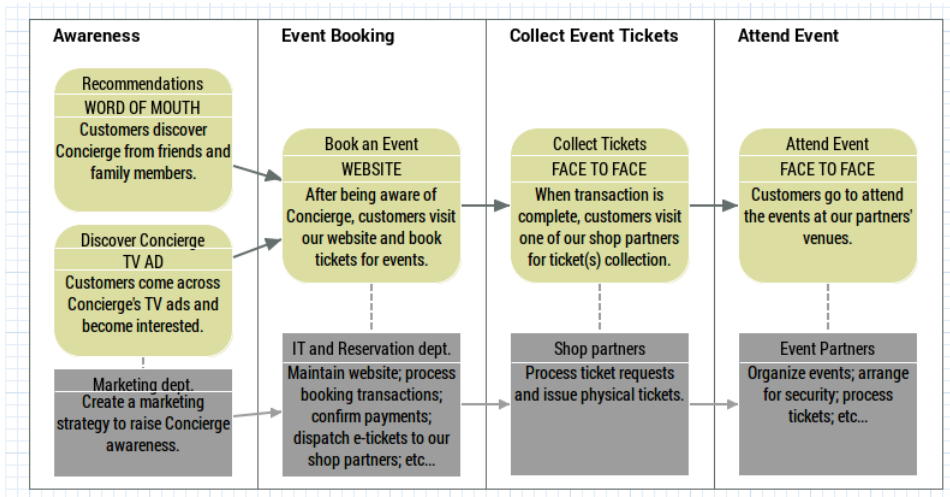


Figure 31: Concierge's Service Journey Map for NSD

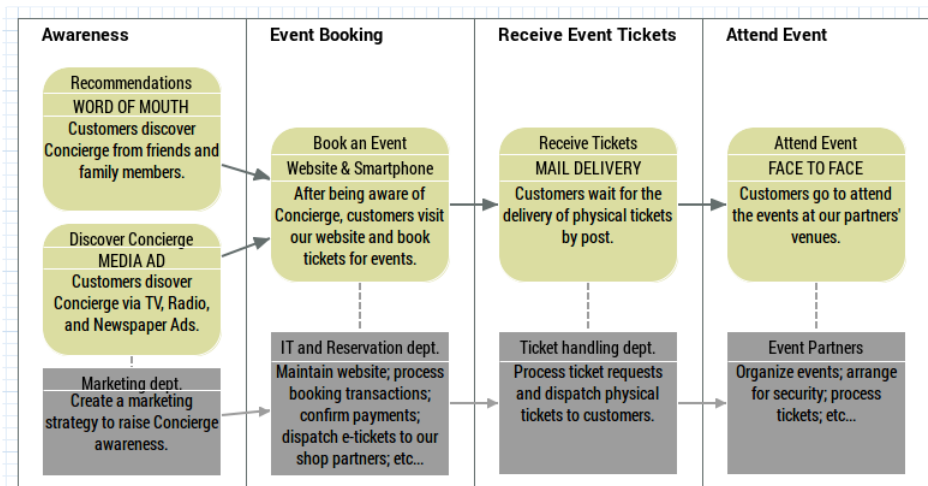


Figure 32: Concierge's Service Journey Map for Service Improvement

As shown in Figure 32, all the changes that were made to the touchpoints based on the service improvement objective discussed in subsection 7.6.1.3 are described as follows:

- The 'Collect Tickets' touchpoint was removed because it is no longer required and a new touchpoint, called 'Receive Tickets', was created to reflect the fact that customers now receive their physical tickets directly by post.
- The 'Shop partners' provider process was removed and a new provider process, called 'Ticket handling dept.', was created in its place so that the physical tickets can be processed and dispatched to customers.
- The 'Book an Event' touchpoint was modified such that customers can now make use of their smartphones as another service channel to book event tickets.

- The service channel of the ‘Discover Concierge’ touchpoint was modified from ‘TV AD’ to ‘MEDIA AD’ since *Concierge* is employing other forms of advertising media such as radio and newspapers.

9.3.1.3 *DIScovery Stage Feedback*

A summary of the feedback provided by participants for the DIScovery stage is given below:

STRONG POINTS

- Service innovation opportunities were visible during the improvement exercise of *Concierge*.
- The identification of service stages and touchpoints was made easy due to their use in customer journey maps.
- The Service Journey Map editor was easy to use.

WEAK POINTS

- The need to describe provider processes was not very evident in this stage.

9.3.2 *Solicitation Stage Results*

The Solicitation stage required the participants to create and make use of a Value Articulation Model to articulate new value benefits for a new *Concierge* service development as well as the improvement of the service. The articulation of value benefits for the customer using the value benefit template discussed in subsection 6.3.2 posed a little problem in the beginning because it was challenging to master the template properly. After some trial and error, the participants were eventually able to describe a value benefit in terms of its three components without any issue.

9.3.2.1 *New Concierge Service Development*

The first execution of the Solicitation stage for a new *Concierge* development, based on the methodology described in subsection 7.3.2, was also associated with the traditional method of designing services based on brainstorming sessions for idea generation and a combination of various design techniques such as personas and a customer journey map. The service quality attributes (SQA) and value propositions (SVP based on *Concierge’s* business model) that were identified are shown in Figure 33.

A total of *twenty-nine* value benefits were articulated for all of the five touchpoints. The ‘Book an Event’ touchpoint contributed to proposing more value to customers with a total of thirteen value benefits. All these articulated value benefits are described in the appendix in section B.1.

Service Offering		Service Offering	
Value Propositions		Quality Attributes	
01	Safe and secure booking experience.	OUT	Outcome quality. Providing service outcome as expected.
02	Wide selection of events to choose from.	EMP	Empathy quality. Caring, individualised attention.
03	Low prices and special promotions.	USE	Usefulness quality. Increases customer satisfaction.
04	Service delivery excellence.	ASU	Assurance quality. Service staff conveys confidence.
		SEC	Security quality. Helps to reassure customers.
		TRU	Trust quality. Customers can depend on our company.
		EFF	Efficiency quality. Providing speed and flexibility.

Figure 33: Concierge's Service Quality Attributes and Value Propositions

9.3.2.2 Existing Concierge Service Development

It was during the improvement exercise of *Concierge*, using the methodology described in subsection 7.3.2.2, which produced the expected service innovation opportunities based on the value benefit improvement objective of subsection 7.6.1.1 and the touchpoint improvement objective of subsection 7.6.1.2. Using the Experience Journey Map of Figure 34 and the value benefit changes identified during the previous execution of the Translation stage (see subsection 9.3.5.1), a summary of the improvement changes that were made are listed as follows:

- *New Articulated Value Benefits*: Ten (refer to section B.2 in the appendix).
- *Added Value Benefits*: None (since no “extra” value benefit was identified during the Evaluation and Translation stages of the previous DISSECT execution – refer to subsection 9.3.3.1 and subsection 9.3.5.1 respectively).
- *Modified Value Benefits*: Three (namely the value benefits which were not fully perceived as described in subsection 9.3.3.1).
- *Removed Value Benefits*: Four (namely the three value benefits which belonged to the removed ‘Collect Tickets’ touchpoint and one value benefit, ‘When customers confirm payment, customers are sent a confirmation email...’, from the ‘Book an Event’ touchpoint).

9.3.2.3 Solicitation Stage Feedback

A summary of the feedback provided by participants for the Solicitation stage is given below:

STRONG POINTS

- Service innovation opportunities were visible during the improvement exercise of *Concierge*.
- The description of service quality attributes helped to identify and articulate value benefits.

- The articulation of value propositions became clearer by connecting value benefits to satisfy the value propositions described in *Concierge's* business model.
- The provider processes for each touchpoint contributed to the removal of value benefits that were considered not implementable based on the business capabilities.¹
- The value benefit provided an *accurate* means to describe a customer benefit and identify ways to improve it.
- The Value Articulation Model editor was easy to use.

WEAK POINTS

- The Value Articulation Model became tedious to analyse as it grew bigger. For instance, it was hard to locate all the value benefits belonging to a specific value proposition and quality attribute.
- The generation of new service ideas for a new *Concierge* service development must be done using traditional techniques such as personas and blueprints.

9.3.3 Evaluation Stage Results

In the Evaluation stage, the trial group had to evaluate the perception level of each value benefit by taking the role of *Concierge's* customers. The trial group was able to complete this stage without much difficulty. The challenging part was to simulate the consumption of the service and to assess the perception level of each value benefit as users of the actual service would do. Consequently, the participants made informed decisions based on their knowledge and experience of prior service encounters.

9.3.3.1 New Concierge Service Development

The first execution of the Evaluation stage for a new development of the *Concierge* service, based on the steps described in subsection 7.4.2.1, showed that customers were able to fully perceive all the value benefits except for three of them belonging to the 'Book an Event' touchpoint. These "lost" value benefits are listed as follows:

- When customers browse webpages, customers click on various links such as 'book event' and 'pay tickets'. Customers can notice that the webpages take on average less than 3 seconds to load.
- When customers want to book events, customers visit the *Concierge* website. Customers are happy to see that our website is rarely offline with an uptime of more than 99%.

¹ The participants provided this explanation after having thought of real-life scenarios where knowledge of the provider processes could affect value articulation.

- When customers are on the Concierge website, customers use the chat function to communicate with an agent. Customers are connected with an available agent in less than 10 seconds.

Note that *no “extra” value benefit* was identified by the participants.

9.3.3.2 *Existing Concierge Service Development*

The second execution of the Evaluation stage for the improvement of *Concierge*, resulted in customers this time to fully perceive all the value benefits that were offered via the modified *Concierge* service. There was thus neither any “extra” nor “lost” value benefit that was identified.

9.3.3.3 *Evaluation Stage Feedback*

A summary of the feedback provided by participants for the Evaluation stage is given below:

STRONG POINTS

- A thorough analysis can be made regarding customers’ perception level of each value benefit.
- The Value Perception Model editor was easy to use.

WEAK POINTS

- The process was a bit long to perform as each value benefit had to be evaluated.

9.3.4 *Capture Stage Results*

The Capture stage required the participants to capture customers’ experience of their service journey. Based on a similar approach adopted for the Evaluation stage, the participants made informed decisions based on their knowledge and experience of prior service encounters to determine the STEI and CTEI ratings to be awarded to touchpoints.

9.3.4.1 *New Concierge Service Development*

The first execution of the Capture stage for a new *Concierge* service development, based on the steps described in subsection 7.5.2.1, produced the following Experience Journey Model of Figure 34. The latter clearly shows that customers were not happy with the experience being provided by the ‘Collect Tickets’ touchpoint. The explanation given was due to customers not willing to travel and collect their tickets from a *Concierge* shop partner. They would rather prefer that their tickets are dispatched to them directly by post.

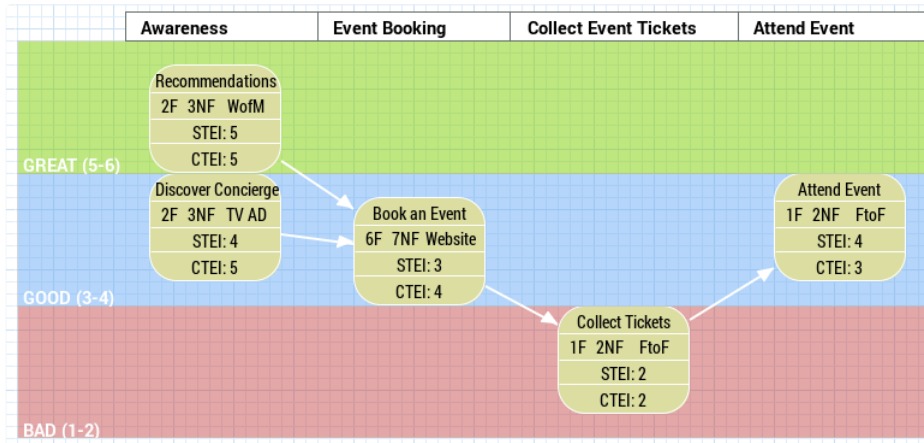


Figure 34: Concierge’s Experience Journey Map for NSD

9.3.4.2 Existing Concierge Service Development

The improvement of the existing *Concierge* service produced a different type of service experience for customers as shown in Figure 35. Both the STEI and CTEI ratings of almost all the touchpoints, except the ‘Recommendations’ and ‘Discover Concierge’, were upgraded as a result of the improvements made to the service. For instance, the poorly rated ‘Collect Tickets’ touchpoint was removed and replaced by a ‘Receive Tickets’ touchpoint which was well appreciated by customers given its STEI and CTEI ratings of four. Furthermore, service refinements made to the ‘Book an Event’ and ‘Attend Event’ touchpoints ensured that they are now being perceived as providing a ‘GREAT’ service experience.

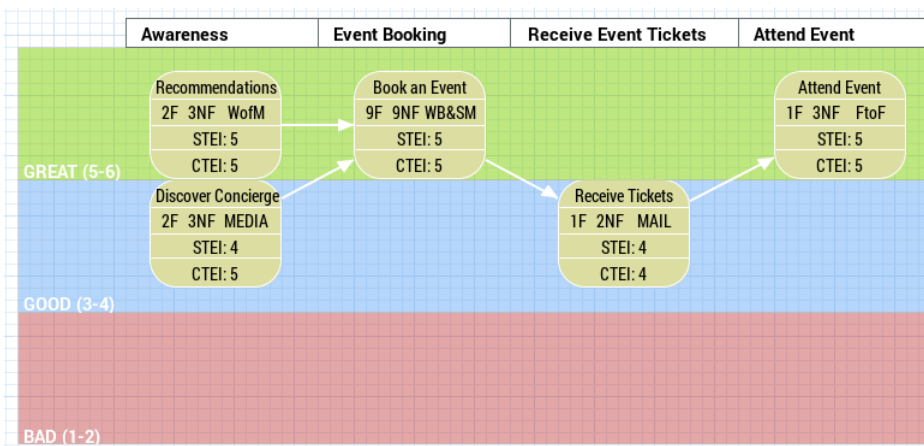


Figure 35: Concierge’s Experience Journey Map for Service Improvement

9.3.4.3 *Capture Stage Feedback*

A summary of the feedback provided by participants for the Capture stage is given below:

STRONG POINTS

- Easy to identify pain points or poorly rated touchpoints which needed to be improved.
- The different experience rating levels proved adequate in expressing the participants' emotional connection towards a touchpoint.
- The Experience Journey Map editor was easy to use.

WEAK POINTS

- The importance of the CTEI rating was not very obvious. This might be due to the difficulty in correctly analysing the service experience of the touchpoints without actually having experienced the real service.

9.3.5 *Translation Stage Results*

In the Translation stage, the trial users were concerned with the identification of value benefit, touchpoint, and service improvement opportunities. These improvement opportunities would then contribute to innovating the *Concierge* service during the next DISSECT execution. Based on the feedback obtained from the Value Perception Model and the Experience Journey Map produced in the Evaluation and Capture stages respectively, the participants completed the Translation stage by imagining ways of improving the service through the addition of new or improved value benefits and touchpoints.

9.3.5.1 *New Concierge Service Development*

The first execution of the Translation stage for developing a new *Concierge* service, based on the steps described in subsection 7.6.2.1, produced a number of improvements that were used to improve *Concierge* during the second execution of the Solicitation stage (see subsection 9.3.2.2).

9.3.5.2 *Existing Concierge Service Development*

The second execution of the Translation stage for the improvement of *Concierge* produced two additional value benefits both belonging to the 'Book an Event' touchpoint:

- "When customers perform bookings, they want to be able to book accommodation and transport in order to attend the event which may be at a remote location."
- "When customers have encountered a problem, they can call our help desk personnel. Customers can avail of the service on a 24/7 basis (even during holidays)."

The next execution of DISSECT will thus have to determine if these value benefits can be proposed to customers during the Solicitation stage.

9.3.5.3 *Translation Stage Feedback*

A summary of the feedback provided by participants for the Translation stage is given below:

STRONG POINTS

- It was easy to identify which value benefits and touchpoints needed to be improved based on the inputs from the Value Perception Model and the Experience Journey Map produced in the previous stages.
- The various types of improvements on value benefits allowed for the creation of good opportunities to innovate *Concierge*.
- The Value Improvement Model editor was easy to use.

WEAK POINTS

- Each value benefit needed to be analysed and this rendered the process long and repetitive as was the case with the Evaluation stage.

9.4 EXPERIMENT FINDINGS AND SERVICEMIF EVALUATION

Based on the results of the experiment carried out using ServiceMIF for the development and improvement of the *Concierge* event booking service, a number of findings have been made. The list below illustrates the most important ones:

- Opportunities for service innovation can be identified and created using the DISSECT approach and service models of ServiceMIF.
- Service innovation opportunities are obtained during the improvement of a service rather than during the initial new service development. These results suggest that ServiceMIF provides more opportunities for incremental innovation than radical innovation (see subsection 2.3.2).
- Each DISSECT stage and service model is dependent on each other in order to achieve the service innovation objectives of ServiceMIF.
- The involvement of customers (and possibly other service stakeholders) is critical in all the five DISSECT stages.

A number of limitations related to the experiment were noted and are mentioned below:

- The size of the participants was small. More participants would perhaps have provided more ideas, suggestions, and comments to improve the results.

- The actual service was not produced and consumed by the participants since the production of a “real” service during the course of this thesis is not a realistic target.
- Some of the results obtained could have been unavoidably biased in order to achieve a specific target during the execution of a stage. For instance, touchpoints could have been awarded a low rating in order to implement identifiable improvement opportunities for them.

Despite the limitations of the experiment, the purpose of the latter was to demonstrate the use of the DISSECT approach and the service models by external trial users for the purpose of evaluating the service innovation capabilities of ServiceMIF. As denoted during the experiment:

- New *value benefits* were articulated and existing ones were modified and removed for improving the service.
- The *service experience* was improved by targeting touchpoints with low STEI and CTEI ratings and identifying improvement opportunities for their value benefits.
- New and improved *service channels* such as ‘SMARTPHONE’ and ‘MEDIA AD’ were respectively identified.
- New or improved software features were suggested for *Concierge’s* website – especially for its ‘Book an Event’ touchpoint.

Based on the above points, it can be reasonably concluded that *ServiceMIF* has fulfilled all the service innovation requirements, identified in chapter 5, as shown in Table 10.

Table 10: Evaluation of ServiceMIF based on SI requirements

SI REF.	SERVICEMIF
SCI: Creation of new or improved customer value.	✓
CII: Improvement of customers’ service experience.	✓
SDI: Identification of new or improved service channels.	✓
TI: Creation of new or improved service software features.	✓

Moreover, the other secondary requirements for service concept innovation (see section 5.2) and client interface innovation (see section 5.3) have also been fulfilled as shown in Table 11 and Table 12 respectively. Note that SCI-5 could not be properly evaluated due to the need for actual customers’ experiences of the service.

Table 11: Evaluation of ServiceMIF based on SCI requirements

SCI REF.	SERVICEMIF
SCI-1: Human-based service	✓
SCI-2: Online-based service	✓
SCI-3: Outcome service quality	✓
SCI-4: Delivery service quality	✓
SCI-5: Image service quality	÷
SCI-6: Functional value	✓
SCI-7: Non-functional value	✓
SCI-8: Value proposition	✓
SCI-9: Value-in-use	✓

Table 12: Evaluation of ServiceMIF based on CII requirements

CII REF.	SERVICEMIF
CII-1: Co-design of the service	✓
CII-2: Emotional experience	✓
CII-3: Cumulative experiences	✓

9.5 COMPARISON OF APPROACHES FOR SERVICE INNOVATION

The results and findings of the evaluation exercise shows that ServiceMIF is effectively able to fulfil all the service innovation requirements and secondary requirements (except for SCI-5 whose result has been inconclusive) as outlined in chapter 5.

A comparison of these results with those obtained from the other service innovation approaches, namely AT-ONE; the service design toolkit (SDT); ServiceML (SML); and Smaply, as assessed in section 5.4 is discussed in the following subsections. These results are further analysed in the next chapter.

9.5.1 *SI Requirements-based Comparison*

Table 13 presents a side-by-side comparison of ServiceMIF and the other service innovation approaches in terms of service innovation (SI) requirements. The comparison reveals that ServiceMIF, through the DISSECT approach and service models, is the only framework to fulfil *all* the SI requirements. Note that the SCI-5 result is considered as fulfilled according to the results obtained for the other service qualities, namely SCI-3 and SCI-4.

Table 13: Comparison of ServiceMIF (SMIF) with the other frameworks for service innovation based on service innovation (SI) requirements.
(Note: ✓ denotes *fulfilled*, × denotes *not fulfilled*)

SI REF.	APPROACH				
	AT-ONE	SDT	SML	Smaply	SMIF
SCI: Service Concept Innovation	×	×	×	×	✓
CII: Client Interface Innovation	×	×	×	×	✓
SDI: Service Delivery Innovation	✓	✓	✓	✓	✓
TI: Technology Innovation	×	×	×	×	✓

9.5.2 SCI Requirements-based Comparison

Table 14 presents a side-by-side comparison of ServiceMIF and the other service innovation approaches in terms of the service concept innovation (SCI) requirements.

The comparison shows that ServiceMIF is the only approach to consider the various SCI requirements by fulfilling eight out of nine. As explained in section 5.1, the SCI requirements help to ensure that a service innovation approach is designed according to *sound principles and concepts* that are important for service innovation.

Table 14: Comparison of ServiceMIF (SMIF) with the other frameworks for service innovation based on service concept innovation (SCI) requirements.
(Note: ✓ denotes *fulfilled*, × denotes *not fulfilled*, ÷ denotes *partially fulfilled*)

SCI REF.	APPROACH				
	AT-ONE	SDT	SML	Smaply	SMIF
SCI-1: Human-based service	✓	✓	✓	✓	✓
SCI-2: Online-based service	✓	✓	✓	✓	✓
SCI-3: Outcome service quality	÷	÷	×	×	✓
SCI-4: Delivery service quality	÷	÷	×	×	✓
SCI-5: Image service quality	✓	×	×	×	÷
SCI-6: Functional value	×	×	×	×	✓
SCI-7: Non-functional value	×	×	×	×	✓
SCI-8: Value proposition	÷	×	÷	×	✓
SCI-9: Value-in-use	✓	×	×	×	✓

9.5.3 CII Requirements-based Comparison

Table 15 presents a side-by-side comparison of ServiceMIF and the other service innovation approaches in terms of the client interface innovation (CII) requirements. The comparison shows that ServiceMIF covers all of the three CII requirements as compared to the other approaches.

Table 15: Comparison of ServiceMIF (SMIF) with the other frameworks for service innovation based on client interface innovation (CII) requirements.

(Note: ✓ denotes fulfilled, × denotes not fulfilled, ÷ denotes partially fulfilled)

CII REF.	APPROACH				
	AT-ONE	SDT	SML	Smapply	SMIF
CII-1: Co-design of the service	✓	✓	✓	✓	✓
CII-2: Emotional experience	×	×	×	×	✓
CII-3: Cumulative experiences	×	×	×	×	✓

CONTRIBUTIONS AND FUTURE WORK

This chapter provides a summary of the thesis as a whole and discusses its contributions to the field of service innovation. A section on future work is meant to explain the potential avenues for further research.

10.1 MEETING THE RESEARCH OBJECTIVES

The background study consisted in performing a literature review on recent research in the field of service innovation. Four research objectives for the background study (see section 1.3) were formulated in order to establish a conceptual framework for this thesis in: (1) the field of service innovation, (2) the aspects of a service to be considered for innovation, (3) the concept of value from a service innovation perspective, and (4) the existing frameworks for service innovation.

The *first* research objective (discussed in chapter 2) revealed that the field of service innovation is in constant expansion with multiple research work and case studies being scattered across various disciplines of Service Science including New Service Development, service design, service marketing, and so on. The list is not exhaustive but gives an idea of the challenges, amount of interest, and complexity of research in the field of service innovation.

A review of the existing approaches for service innovation revealed that while much research is focusing on conceptualising the process of service innovation, there are practical methods, techniques, and tools that assist in the development of innovative services. However, these methods, techniques, and tools are mostly interested in the generation of new service ideas during the service conception phase. As such, they do not take into consideration the feedback of customers after they have experienced the service during the service consumption phase. Such customer feedback can be valuable for the creation of service innovation opportunities for the improvement of an existing service as portrayed in this thesis.

Four service innovation dimensions were discussed as being important for a service innovation process to fulfil, namely the service concept, the client interface, the service delivery, and technology.

The *second* research objective (addressed in chapter 3) indicated that in order to carry out a successful service innovation process, a number of key service aspects have to be taken into account. These key service aspects are the service concept, service quality, service experience, and the development

life cycle of a service. The service quality can be analysed based on three dimensions: outcome, delivery, and image. The delivery quality dimension was shown to rely on quality attributes defined in quality models such as SERVQUAL and the ISO/IEC 25010:2011 standard.

The *third* research objective (chapter 4) showed that the development of value requires an understanding of both the functional and non-functional benefits that customers expect to perceive through usage of a service. Each one of these customer benefits are associated to a service quality attribute. In addition, some of these benefits can form part of a value proposition due to their uniqueness in helping to distinguish or differentiate a company's offerings from its competitors.

The *fourth* research objective (chapter 5) focused on an assessment of four service innovation approaches, namely AT-ONE; the service design toolkit; ServiceML; and the smaply tool, and revealed deficiencies and differences in all the approaches. None of the approaches was able to fulfil all the identified service innovation requirements. Chapter 5 also addressed the *fifth* research objective through the identification of service innovation requirements and secondary requirements for a service innovation approach. A total of four service innovation requirements, based on the four innovation dimensions, were identified. Moreover, twelve secondary requirements, concerned with service concept innovation and client interface innovation, were described.

The *sixth* research objective, which addresses both the development and implementation of a value development framework that is comprised of a methodology approach and its supporting service models so as to satisfy the identified service innovation requirements, was addressed through chapters 6, 7, and 8. The value benefit template was presented and provides a way to describe either a functional or a non-functional value benefit based on three essential components, namely the service context and service action that lead to a benefit for the customer. In addition, each stage of the value development approach, DISSECT, was described in terms of its principles, methodology, the metamodel of its supporting service model, and its service model editor. Finally, the main implementation details of the ServiceMIF model editors were discussed along with the requirements for the development platform for the editors.

The *seventh* and last research objective, fulfilled in chapter 9, elaborated on the experiment performed using the *Concierge* case study to evaluate the service innovation capabilities of the value development framework using its methodology approach and supporting service models based on the set of identified service innovation requirements. The results and findings of the experiment are described in the next section.

10.2 THESIS CONTRIBUTIONS

This thesis' purpose was stated to be the development and implementation of a value development framework to validate or refute the hypothesis that service innovation can be achieved through a value development framework that meets the requirements for the creation of new or improved customer

value during the development of a service and, thus, close the gaps in service innovation research as mentioned in section 1.2.

Based on the findings of the experiment that was carried out within its stated limitations, it can be reasonably concluded that ServiceMIF with its DISSECT value development approach can achieve service innovation by contributing to the creation of new or improved customer value during the development of a service. Moreover, ServiceMIF has fulfilled *all* the service innovation requirements and met all the secondary requirements (with the image quality requirement being also considered as fulfilled) as compared to all the other innovation approaches under review. Therefore, the stated hypothesis of this thesis has been *validated*.

All the stated research objectives of this thesis have been addressed and the value development framework, represented by ServiceMIF and its DISSECT approach and service models, has achieved its purpose and closed the current gaps in service innovation research with the following contributions:

- Provides a framework for the development of innovative services using a value development approach. This approach takes into consideration the various important aspects of a service and customer value such as service quality, service delivery, and service experience. Additionally, the findings from the experiment suggest that ServiceMIF provides more opportunities for incremental innovation than radical innovation. As such, with the help of customers, a service can be perfected through a series of incremental innovations using ServiceMIF.
- The framework can be integrated into other development processes that rely on a service's development life cycle. For instance, existing service design techniques and tools can form part of the initial service conception phase to generate new service ideas. Once this process is completed, the other service life cycle phases can be completed using the value development framework.
- Provides a way to quantitatively and qualitatively describe customer value in terms of functional and non-functional value benefits using a value benefit template. The latter captures three important factors, namely service context and service action, which lead a customer to perceive a benefit.
- Proposes a means to quantify the outcome of a service innovation process based on the number of new or improved value benefits produced after a service has been consumed. The inability to do this so far has been acknowledged as being a real problem to recognise the success of a service innovation process [46].
- Provides a means to determine the cumulative touchpoint experience for parts of a service journey using the CTEI rating and relate that to the identification of problems which customers are facing during the service delivery through the provider processes that are linked to the problematic touchpoints.

10.3 FUTURE WORK

The prime concern for ServiceMIF is the validation of the findings discussed in section 9.4 by conducting experiments on real world scenarios involving the development of a new service or the improvement of an existing one.

Furthermore, a set of improvements for the value development framework have been identified to drive future research. These are discussed below:

- *Service recovery*: The current value benefit template takes into account elements of a service encounter that trigger a benefit for customers. Other aspects of a service concept can be considered for integration into the current definition of a value benefit. For instance, according to the service recovery model of Goldstein et al. [29], the expectations of customers, in terms of how a service should recover from a failure to provide value benefits to its customers, need to be met with an appropriate service recovery response from the provider such as ‘fair fix’ and ‘apologize’. A value benefit that describes such problems and the techniques to recover from them can provide a better means to manage and coordinate the value being proposed to customers and make sure they are satisfied at each service encounter.
- *Value measurement*: There is currently no measurement method being employed for the description of functional and non-functional value benefits. As such, it is left up to the service developer to define the quality metrics such as web page loading time in seconds and employee friendliness on a linear scale. The use of a formal measurement method such as the Structured Metrics Metamodel (SMM) from OMG [48] and Hubbard’s approach [35] can yield more accurate results in terms of value perception and thus needs to be investigated.
- *Value for the provider*: In this thesis, only value for the customer is being considered. From the viewpoint of a service provider, each time a value benefit is chosen to be proposed to customers, the risks and rewards for implementing the value benefit needs to be calculated such as in terms of revenue, effort, time, market share, and brand image, amongst others. In this respect, the value development approach, DISSECT, can be enhanced to improve the selection process of value benefits to be proposed to customers according to the criteria defined in the Solicitation stage (see subsection 7.3.1). A potential research avenue concerns the integration of DISSECT with OMG’s Value Delivery Modelling Language [49] which is a business modelling language for analysing how customer value can be linked to business activities (similar to provider processes in ServiceMIF) and the corresponding performance value for both the service provider and its network partners.

IV

APPENDIX

A

MODEL EDITOR IMPLEMENTATION

This appendix contains the Ecore metamodel of the Value Perception Model and example code to illustrate the implementation of a functional value benefit as part of a model element in ServiceMIF's Value Perception Model editor.

A.1 ECORE METAMODEL OF THE VALUE PERCEPTION MODEL

The following Ecore metamodel or domain model with the .ecore file extension is based on the metamodel of the Value Perception Model illustrated in subsection 7.4.3. As shown in Figure 36, it is required to include additional model elements not part of the metamodel, such as `Provider_ValueConnector` and `Cust_ValueConnector`, in order to connect the various model elements together in an Ecore domain model.

Note that some model elements can be annotated and, thus, have various attributes of the `EString` value type which are used to store any information entered by the user.

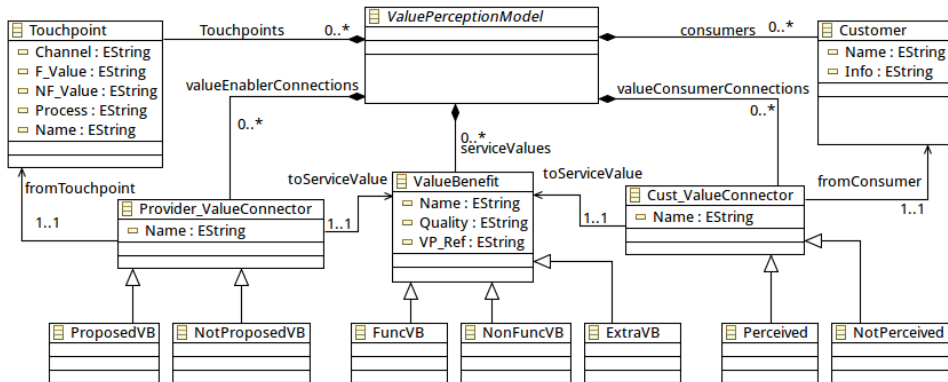


Figure 36: Ecore model (metamodel) of the Value Perception Model

A.2 EXAMPLE CODE FOR A FUNCTIONAL VALUE BENEFIT

The development of graphical model editors using the Spray and Graphiti frameworks (see chapter 8) requires the implementation of three specific Spray code files, namely the `.shape`, `.spray`, and `.style`.

The Shape Model (`.shape`) is used to define the shape of a model element. As shown in Listing 1, a functional value benefit is a rounded-rectangle defined with a width of 220 pixels and height of 40 pixels. Text labels must also be described. For instance, the `ValueQualityAttributeText`, which is used to display the quality attribute tag, is 20 pixels by 15 pixels. The other text labels for the value proposition tag and the value benefit description are defined in a similar manner.

Listing 1: Shape Model code for a Functional Value Benefit

```

shape FunctionalValueBenefitShape style FunctionalStyle {
  stretching(horizontal=false, vertical=true)
  rounded-rectangle {
    position(x=0, y=0)
    size(width=220, height=40)
    curve(width=18, height=18)
    // quality attribute tag
    wrapped-text style FontStyle {
      size (width=20, height=15)
      position(x=0, y=0)
      align(horizontal=center,vertical=middle)
      id = ValueQualityAttributeText
    }
    // value proposition tag
    line style ContainerLineStyle {point(x=0,y=20) point(x=29,y=20)}
    wrapped-text style FontStyle {
      size (width=20, height=15)
      position(x=0, y=20)
      align(horizontal=center,vertical=middle)
      id = ValuePropRefLabel
    }
    line style ContainerLineStyle {point(x=29,y=0) point(x=29,y=40)}
    // value benefit description based on VB template
    wrapped-text style FontStyle {
      size (width=180, height=120)
      position(x=30, y=0)
      align(horizontal=left,vertical=middle)
      id = FunctionalValueText
    }
  }
}

```

The Spray Model (.spray) is used for defining the relationship between a Shape Model and an Ecore Model (.ecore). Based on Listing 2, the elements of the FunctionalValueBenefitShape are linked to the corresponding elements present in the .ecore metamodel of Figure 36. For instance, the Name attribute belonging to a functional value benefit (i.e., a ValueBenefit of type FuncVB), as shown in the .ecore diagram, is connected to the FunctionalValueText element present in the .shape file of Listing 1 via the following code: Name into FunctionalValueText.

Listing 2: Spray Model code for a Functional Value Benefit

```
class FunctionalValueBenefit icon "ecore/functional.gif" {
  // Connect functional VB shape elements (from .shape)
  // to metamodel elements (from .ecore)
  shape FunctionalValueBenefitShape {
    Name into FunctionalValueText
    Quality into ValueQualityAttributeText
    VP_Ref into ValuePropRefLabel
  }
  // Set up palette
  behavior {
    create into serviceValues "Functional" palette "Customer VB"
  }
}
```

Listing 3: Style Model code for a Functional Value Benefit

```
style FunctionalValueBenefitStyle extends ValuePerceptionModel_Style {
  line-color = white
  background-color = RGB(214,192,138)
}
```

The last Spray code file is the Style Model (.style) which defines the shape properties such as size and colour of a model element. Based on Listing 3, a separate style, FunctionalValueBenefitStyle, for a functional value benefit (i.e., a rounded-rectangle) is defined with a white border and a background colour specified with RGB values 214, 192, and 138.

B

EXPERIMENT DATA

This appendix contains the set of articulated value benefits for the *Concierge* service during the experiment discussed in chapter 9 involving the use of the DISSECT approach and service models of ServiceMIF.

B.1 CONCIERGE'S INITIAL VALUE BENEFITS

The Solicitation stage produced a total of *twenty-nine* value benefits during the initial development of the new *Concierge* service. Each value benefit is associated with a touchpoint, a service quality attribute (SQA) and *can be* associated with one or more value propositions (SVP). The complete list of articulated value benefits is shown in Table 16.

Table 16: Concierge's value benefits produced during its initial development

TOUCHPOINT	SVP	SQA	VALUE BENEFIT DESCRIPTION
Recommend.	—	OUT	When customers hear about Concierge from friends and family members, customers decide to phone Concierge's help desk in order to know more about the service.
	—	OUT	When customers hear about Concierge from friends and family members, customers decide to visit Concierge's website so as to know more about the service.
	o3	EMP	When customers phone Concierge's help desk, the latter informs them about a 15% discount on event prices for one month. Customers are happy and more interested in using our service.
	o3	EMP	When customers visit Concierge's website, customers see a banner informing them about a 15% discount on event prices for one month. Customers are happy and more interested in using our service.

Continued on next page.

Table 16: (Continued)

TOUCHPOINT	SVP	SQA	VALUE BENEFIT DESCRIPTION
Dis. Concierge	04	EMP	When customers phone Concierge's help desk, customers speak to personnel and ask questions about the service. Customers are pleased that they are replied in a warm and friendly manner by our service personnel.
	—	OUT	When customers come across Concierge's TV ads, customers decide to phone Concierge's help desk in order to know more about the service.
	—	OUT	When customers come across Concierge's TV ads, customers decide to visit Concierge's website so as to know more about the service.
	03	USE	When customers phone Concierge's help desk, the latter informs them about a 15% discount on event prices for one month. Customers are happy and more interested in using our service.
	03	USE	When customers visit Concierge's website, customers see a banner informing them about a 15% discount on event prices for one month. Customers are happy and more interested in using our service.
Book an Event	04	ASU	When customers phone Concierge's help desk, customers speak to personnel and ask questions about the service. Customers are pleased that they are replied in a warm and friendly manner by our service personnel.
	—	OUT	When customers are on the booking page, customers browse the list of events in order to select events for booking.
	***	OUT	When customers are on the Concierge website, customers can chat with one of our online agents so as to resolve any issue encountered while booking.
	***	OUT	When customers are visiting the Concierge website, customers can call our help desk personnel in order to clarify any issue while browsing our website.
	—	OUT	When customers are on the payment page, customers click on the 'pay tickets' button in order to confirm payment transaction for bookings.
	—	OUT	When customers are on the booking page, customers click on the 'book event' button in order to validate the booking selection and proceed with payment.

Continued on next page.

Table 16: (Continued)

TOUCHPOINT	SVP	SQA	VALUE BENEFIT DESCRIPTION
	—	OUT	When customers confirm payment, customers are sent a confirmation email with details of how to collect tickets at one of Concierge's shop partners.
	02	USE	When customers are on the booking page, customers browse list of events. Customers discover a wide variety of events sorted automatically by category.
	01	SEC	When customers confirm the booking transaction, customers are shown the payment page. Customers see the notice of security and the padlock icon on the browser which make customers feel confident about the security of the transaction.
	04	TRU	When customers decide to cancel a transaction, customers call Concierge's help desk and ask for cancellation. Customers are happy that the cancellation of tickets is possible and will be refunded their paid tickets.
	—	EFF	When customers browse webpages, customers click on various links such as 'book event' and 'pay tickets'. Customers can notice that the webpages take on average less than 3 seconds to load.
	03	TRU	When customers want to book events, customers visit the Concierge website. Customers are happy to see that our website is rarely offline with an uptime of more than 99%.
	04	ASU	When customers phone Concierge's help desk, customers speak to personnel and ask questions about the service. Customers are pleased that they are replied in a warm and friendly manner by our service personnel.
	04	EFF	When customers are on the Concierge website, customers use the chat function to communicate with an agent. Customers are connected with an available agent in less than 10 seconds.
Collect Tickets	—	OUT	When customers visit one of Concierge's shop partners, customers provide booking transaction details in order to receive physical tickets from the shop personnel.
	04	EFF	When customers approach shop personnel, customers ask for the issue of their physical tickets. Customers can notice that it takes less than one minute to get the tickets printed and handed over to them.

Continued on next page.

Table 16: (Continued)

TOUCHPOINT	SVP	SQA	VALUE BENEFIT DESCRIPTION
Attend Event	o4	ASU	When customers visit a shop partner, customers interact with the shop personnel. Customers are pleased that the shop personnel converse in a warm and friendly manner.
	—	OUT	When customers are at the event venue, security personnel ask customers for their tickets in order to validate the latter and allow them entry.
	o4	SEC	When customers are at the event venue, customers have to go through security checkpoints. Customers feel safe and reassured about the security measures in place.
	o4	ASU	After clearing the security checks, customers proceed to enter the event venue. Customers are satisfied to see that the venue staff are acting in a formal and professional manner.

B.2 CONCIERGE'S NEW VALUE BENEFITS

During the Translation stage as part of the initial development of *Concierge*, the participants were able to identify a total of *ten* new value benefits after having consumed the service. These ten new value benefits are part of three touchpoints, namely 'Book an Event', 'Receive Tickets', and 'Attend Event', which were articulated during the second execution of the Solicitation stage for the improvement of *Concierge*. Table 17 contains a listing of these new value benefits.

Table 17: Concierge's new value benefits articulated during service improvement

TOUCHPOINT	SVP	SQA	VALUE BENEFIT DESCRIPTION
Book an Event	—	OUT	When customers want to access Concierge's website and service, they want to connect via their smartphones in order to be able to perform bookings at any time.
	—	OUT	When new events become available on Concierge, customers want to receive email notifications because they are interested to know about the latest events on a frequent basis.
	—	OUT	When customers are on the event booking page, they would like to send an event's details to friends and family over email, Facebook, and Twitter in order to invite them to join.
	—	OUT	When customers have completed a booking transaction, they would like Concierge to automatically synchronise their calendar information stored on popular online calendar applications like Google Calendar in order to avoid doing so manually.
	o4	EMP	When customers visit Concierge's website, they want to be able to load their saved preferences. Customers need a personalised service which can remember their event preferences such as venue, seat location, and price range so that they do not need to enter such information again.
Receive Tickets	o4	USE	When events are cancelled by the event organisers, Concierge informs customers about the cancellation. Customers can then change their booking details accordingly and would avoid going to the events for nothing.
	—	OUT	After confirming a booking transaction, Concierge's ticket handling department dispatches the physical tickets by post in order for customers to receive them as fast as possible.
	—	EFF	After Concierge's ticket handling department has sent the tickets, customers wait for the mail to be delivered. Customers generally only need to wait for a period of less than 5 business days for the tickets to be delivered.
Attend Event	—	TRU	If customers have not received their tickets after a period of 7 business days, customers contact Concierge's help desk. Customers are relieved to learn that Concierge will investigate the cause of the delay and dispatch new tickets if required.
	o4	TRU	If customers have any problem with their tickets, customers contact Concierge's help desk. Customers are pleased that they can rely on Concierge to sort out any issues that crop up during their service experience.

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