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VALUE AS AN AID FOR UNDERSTANDING PERCEIVED SERVICE QUALITY OF DIGITAL SERVICES: THE JYU FACULTY OF INFORMATION TECHNOLOGY AS A CASE STUDY

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ABSTRACT

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Perceived service quality is a widely discussed and debated theme in service marketing literature, with various overlapping definitions and terminologies that have accumulated over time. The idea of perceived service quality for digital services borrows heavily from the existing service marketing research from the 80s and tries to modify and adapt these existing models for conceptualising and measuring. This represents a significant research gap since services without a digital interface are much more variable in nature than digital services and assume the service provider as the sole owner and influencer of the perceived quality. The bias originating from this research gap leads to a neglect of the possibility that the perception of quality in digital services could be determined primarily by the customer themselves, based on certain aspects that drive value creation and assessment during the service usage lifecycle.

Service Dominant Logic, which is one of the paradigms that effectively explains value creation in practice considers service as the integration of resources for personal and collective benefit and achievement of objectives where in the user is considered as a value co-creator. Building on the tenets of Service Dominant Logic, Service Logic considers the user as the primary value creator while giving the role of co-creator to the service provider, who has the onus of co-creating value by integrating with the user's processes.

This research is conducted by the means of a review of literature for forming a theoretical framework for understanding perceived service quality of digital services using value as an aid where the socio-cultural context of use, objectives and digital competencies are considered as the broad-based value drivers. The proposed framework is then tested using empirical data collected as part of interviews for an interpretivist case study via the inductive approach.

Findings of this research indicate that value can indeed be used as a theoretical concept for understanding the phenomenon of perceived service quality for digital services where the interface between the provider and the consumer happens, primarily in the user's value creation space which may be facilitated by the means of resources by a pro-active service provider.

Keywords: Digital services, Perceived Service Quality, Service Marketing, Information Systems,

FIGURES

TABLES

ABBREVIATIONS

PSQ: Perceived Service Quality
S-D Logic: Service Dominant Logic
SDL: Service Dominant Logic
G-D Logic: Goods Dominant Logic
GDL: Goods Dominant Logic
FP: Foundational Premise
IHIP: Intangibility Heterogeneity Inseparability Perishability
JYU: The University of Jyväskylä, (Jyväskylä, Finland)
IT: Information Technology
IS: Information Systems
IMDP: International Master's Degree Programme
LMS: Learning Management System

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1 INTRODUCTION

The concept of quality has always been the subject of a debate hinging between the subjective and the relativistic. It has been often mistaken for vague and non-specific adjectives such as "*goodness, or luxury, or shininess or even weight*" (Crosby 1979). In their defining work about Perceived Service Quality, Anantharanthan Parasuraman, Zeithaml, and Berry (1985), start off by positing the concept of quality as an elusive and indistinct construct.

Most of the initial research about defining and measuring quality for services has been efforts at borrowing from the goods or product marketing-based research. However, around the beginning of the 80s, research around formulating dedicated concepts and measurement models for service quality intensified. The main reason for this intensification of efforts has been attributed to the focus on the service economy as well as the subsequent realisation that services are way too distinct from the traditional goods because of unique characteristics of intangibility, heterogeneity as well as inseparability.

Anantharanthan Parasuraman, Zeithaml, and Berry (1985) have identified the following as the main underlying themes of service quality research:

- It is more difficult for the consumer to evaluate service quality than goods quality.
- The perceptions of service quality result from a comparison of consumer expectations with actual service performance.
- The evaluations of service quality are not made entirely based on the outcome of a service, but they also involve the evaluation of the service delivery process.

Over time, there has been a lot of research into the measurement of dimensions and specific attributes that compose perceived service quality. Based on the two distinct perspectives or schools of thought, numerous models have been proposed, criticised, improved and adapted to different kinds of service-based industries. Although, there have been improvements to the proposed models based

on constructive criticism and rethinking, there has been a general lack of coherence and agreement on standardising these models for the measurement of perceived service quality.

The idea of perceived service quality of digital services is a unique one for the reason that digital services are primarily provided using digital channels i.e. the use of information systems as technology enabling tools for making a service available. Hence, there have always been conflicting opinions regarding the measurement of the service quality of digital services. Because of its nature as an emerging discipline that the study information systems was back then, researchers from the field of information systems were content with modifying and adapting the theories from service marketing as reference discipline in order to propose conceptual and measurement models. In recent times however, the nature of digital services has undergone rapid changes at a dynamic pace, rendering the dated models from service marketing field rather irrelevant. Also, the emergence of information systems as a fully developed reference discipline in its own right (Baskerville and Myers 2002), has increased the calls for perceived service quality of digital services to be reconceptualised in a new light.

1.1 Objective of the Report

The main objective of this thesis report is to explore how the concept of value can be used as an aid for understanding the perceived service quality of digital services. Several different sub-concepts related to value – value in exchange, value in use, value in context and finally, value in socio-cultural context are discussed in this respect. In order to develop a fundamental basis of these concepts, Service Dominant Logic (Vargo and Lusch 2004; Lusch and Vargo 2014) and its revisions from Service Logic (Grönroos 2006; 2011a) are used for interpreting the transition of value in a service ecosystem. This theoretical basis is then used for understanding how the users of a digital service assess as well as create and co-create value during the service lifecycle while their persona as service consumers evolves and so does their perception of the digital service quality. Therefore, the primary question that this report seeks to answer is:

What are the broad-based drivers of value creation and assessment for users of digital services?

Along with establishing the broad-based drivers, the report seeks to understand how the user persona evolves during the service lifecycle leading to a change in the perception of the quality of digital service, (as perceived) by the individual user. Thus, a secondary research question is required in order to achieve the overall objective of this thesis report:

How does the evolution of an individual user, during the service lifecycle (as understood by the broad-based drivers of value creation and assessment) affect the perceived service quality of digital services?

The construct of Perceived Service Quality, however, has been established in academic literature over a considerable period. It is therefore imperative that this literature is discussed in depth and the report establish a general reasoning as to why the concept of value is being explored as an alternative aid for understanding the perceived service quality of digital services. Therefore, a third question that is answered at the very beginning of this report is:

What is Perceived Service Quality and how is this construct applied to digital services in particular?

1.2 Structure of the Report

The second chapter of this report tracks the emergence and subsequent establishment of the concepts and methods of measurement related to perceived service quality in service marketing literature and follows it up with a description of these measurement models to various digital channels-based services that use information systems as tool(s) for service provision in some form or the other.

The third chapter introduces the relevant terminologies from the Service Dominant logic lexicon before expanding on its ten foundational premises. Service Logic, as a revised improvement upon Service Dominant Logic is then introduced and the premises relevant to constructing our proposed theoretical framework are identified.

The fourth chapter deconstructs an 'actor' as described by S-D Logic while also drawing from relevant information systems-based theories related to the user of information systems as a social actor. The broad-based drivers of value with respect to a digital service user are identified as a build up to the theoretical framework.

Chapter five is dedicated to building and proposing a theoretical framework that seeks to understand the phenomenon of perceived service quality from the user's perspective as a two-step approach that considers value creation and assessment in a socio-cultural context as well as the evolution of the digital service user during several iterations of usage in the service lifecycle.

In chapter six, the selected research methodology is introduced and its relevance to this study is established, while also elaborating on the method of empirical data collection and analysis. Chapter seven, presents outcome of the empirical data analysis conducted along with anecdotal evidence from user interviews. Chapter eight evaluates the thesis report with respect to the originally laid down objectives and their implications. The final chapter reviews the research in terms of approach, contribution to knowledge and future research in this direction.

2 PERCEIVED SERVICE QUALITY

The construct of perceived service quality is one of the most discussed as well as debated in service marketing theory and literature. The formulation, definition and measurement of perceived service quality have received phenomenal academic attention over the years, and this is well reflected in the immense but scattered literature available on the topic. The basic foundations of this construct that have been laid in the service quality theory derived from research in product quality as well customer satisfaction. In initial literature, perceived service quality is defined as the overall observed discrepancy between the service consumer's expectations and the perceptions derived from the service consumption experience (Grönroos 1982a; Lewis and Booms 1983). But, as Roest and Pieters (1997) point out, a broad based definition that specifies service quality as the observed difference between expectations and performance doesn't suffice, especially in distinguishing perceived service quality from other popular marketing constructs such as customer satisfaction, value and attitude. That has indeed been the case, with the existing service marketing research not quite agreeing with the causal and deterministic effects between these constructs. While some researchers propose satisfaction as an antecedent of perceived service quality, others believe that perceived service quality itself determines customer satisfaction. Still others suggest that perceived service quality is just a *proxy* extension to the already existing concept of customer satisfaction. This difference in opinion also stems from the fact that during the early stages of research on the topic of perceived service quality the emphasis has predominantly been on measurement of constructs rather than their conceptualization.

2.1 Conceptual Understanding of Perceived Service Quality

Realizing that a more established agreement and knowledge about the relationship between perceived service quality and other closely related constructs will

enable practitioners to manage perceived service quality better as also enable researchers to move on to study more important aspects of the construct, Roest and Pieters (1997), have proposed a nomological network of these constructs. They suggest that perceived service quality be treated as a relativistic construct with cognitive foundations and a service-related post-purchase evaluation of what a consumer tends to gain from the service experience. This definition also clarifies to a certain degree, the prevailing misconceptions around the concept of perceived service quality. Therefore, it is not an absolute evaluation, is not rooted in affective foundations, is not a consumer related evaluation but centred more around the service and its subsequent experience. In order to establish this nomological network of perceived service quality and relatively similar constructs, Roest and Pieters (1997), rely on six dimensions for a conceptual analysis and examination based research in order to arrive at a consensus, namely – time (post-purchase), basis (of re-purchase decisions), object (the service), content (cognitive), context (relative) and aggregation (summation of diverse transactions over time).

Owing to the fact, that this (Roest and Pieters 1997) is one of the few comprehensive studies in marketing literature about the nomological conceptualization of the construct of perceived service quality as against the measurement of the construct, specifications about the nature of perceived service quality based on the six dimensional model will be used as referral guide for the rest of this thesis report. This is not to suggest that the specifications are definitive and all-inclusive and any instances where the author thinks that the specifications need a revision or rethinking will be pointed out as and when required.

Table 1 The conceptual nature of Perceived Service Quality (Roest and Pieters 1997)

Dimension	☑	☒
Context	Relativistic	Absolute
Content	Cognitive	Affective
Time	Post purchase evaluation	Pre-purchase evaluation
Aggregation	Service experience	Consumer experience

2.2 Measurement of Perceived Service Quality

The conceptualization of perceived service quality, as proposed by Roest and Pieters (1997) and detailed in the previous section, was published at a much later stage than the introduction of the concept itself. As discussed in the previous section, early stage research on the topic of perceived service quality has been predominantly focused on measurement of constructs. There have generally

been two perspectives that service quality researchers have adopted as the basis of their studies for investigating measurement of perceived service quality. The "Nordic" (a few works chose to refer to this as the "Scandinavian" or even the "European" perspective) perspective generally describes service quality in terms of two specific dimensions – the functional quality and the technical quality. The "American" perspective, which is more dominant and widespread throughout the literature, uses service encounter experience characteristics as the descriptive terms for perceived service quality. A study of the available literature makes it apparent that perceived service quality is a multidimensional construct. But there is no consensual, unifying theory about the nature of these constructs or the basis for their selection and usage as quantifying dimensions to the construct. Also, service quality, as part of the complete service experience can be evaluated at multiple levels of abstraction by multiple actors from varying perspectives (Carman 1990).

2.2.1 The Nordic Perspective and Similar Measurement Models

In his seminal work conceptualizing perceived service quality, Grönroos (1982b) proposed that perceived service quality comprises of three distinct dimensions:

1. Technical quality: The actual outcome of a service encounter that can, in all probability, be measured by the consumer of the service in an objective manner.
2. Functional Quality: The interaction specific element of the service encounter, concerning the service provider and the service consumer, which is likely to be measured in a more subjective and therefore, relative manner by the service consumer.
3. Corporate Image: This is a more brand specific, social quotient related service consumer perception of the service provider (or the service provider organisation). In a way, it combines perceptions from the above two dimensions, while adding factors such as physical location, service providing organisation's employees' competence as also, marketing and external communication activities for brand building.

An important argument for reviewing the determining dimensions of perceived service quality was put forth by Lehtinen and Lehtinen (1991) where they stressed the importance of differentiating between the quality of the process of service delivery as against the quality of the outcome of service delivery. They actually suggest two different approaches to the quantitative dimensions of service quality in the same published research which is again an indication of the lack of a unifying theoretical view point in the service quality research literature. The first proposed approach is much in line with (Grönroos 1982b), with a three dimensional model of service quality deterministic dimensions:

1. Physical Quality: This dimension is a combined view of all the physical elements of a service such as the physical product and maybe even physical support. The authors themselves suggest that the dimension of physical quality incorporates technical quality as well as functional quality to some degree from the model suggested by Grönroos (1982b).
2. Interactive Quality: This dimension originates in the interaction between the customer and the interactive elements of the service encounter as provided by the service provider. Interestingly, Lehtinen and Lehtinen (1991), also mention the provisional possibility of offering the same basic service by using a human contact or a physical equipment or the service consumer himself, therefore establishing three different alternatives of interactive quality delivery in services: automatic, self-service or human contact enabled service delivery. This is the one of the first instance of service delivery channels being mentioned in the perceived service quality literature and forms an important part of the eventual model to be proposed for modern day digital services.
3. Corporate Quality: This is similar to the symbolic dimension of image quality as proposed by (Grönroos 1982b), and is said to develop during the history of the service providing organisation. The authors also suggest that this is the one dimension that can be experienced by the service consumer before participating in the actual service production (and consumption) process. This in stark contrast to the conceptual definition as specified by Roest and Pieters (1997), who stress that perceived service quality be strictly treated as a post-purchase evaluation. Again, Lehtinen and Lehtinen (1991) mention word-of-mouth recommendations as an important part of the corporate quality dimension, which can be related to the modern day influence that the users of digital services exhibit on their peers in a socially connected contextual setup.

The two-dimensional quality approach as suggested by Lehtinen and Lehtinen (1991) is proposed as an abstract, higher level approach, in order to study perceived service quality from a more customer centric viewpoint. It consists of:

1. Process Quality: This is subject to the service consumer's personal judgement and how well he thinks he fits into the service production (provision) process. It is based on the concept of customer participation, as part of the service delivery process with the nature of participation as described by the authors ranging from heavy to casual. The quality therefore, is likely to depend on the consumer's style of participation fitting to the service provider's (whether human or automated) service style. A misfit originating from the service consumer's different participation style can lead to a lower perceived

quality even when the service provider's style of service stays identical. This interesting observation is vital to the understanding of user competencies and their perception of service in modern day digital services.
2. Output Quality: This construct concerns the more subjective evaluation of the eventual result of a service provision process by not just the consumer but the actors that form a part of the service environment. Therefore, a better control of the service provision process quality enables a better control of the output quality, given the fact that the subjective nature of output quality is rather difficult to measure.

Largely comprising similar dimensions as the other models discussed above as part of the Nordic perspective, Rust and Oliver (1993) proposed a three component model based on the following three dimensions:

1. Service Product: is a reference to the outcome of a service process and hence pretty much in line with output quality (Lehtinen and Lehtinen 1991), physical quality (Lehtinen and Lehtinen 1991) and technical quality (Grönroos 1982b)
2. Service Delivery: is a reference to the process of service provision and the quality of this process and hence is again comparable to process quality (Lehtinen and Lehtinen 1991), interactive quality (Lehtinen and Lehtinen 1991) as well as functional quality (Grönroos 1982b).
3. Service Environment: is a rather unique dimension as compared to the other models from this perspective. On an abstract level, this dimension addresses the quality aspect of physical environment of service provision, but on a more micro level, the service environment also includes word of the mouth behaviour, social image of the service provider and other such issues.

2.2.2 The American Perspective and Similar Models Based on It

As mentioned previously, the American perspective on service quality, championed by Anantharanthan Parasuraman, Zeithaml, and Berry (1985), uses characteristics that are an integral part of the service consumer's experience of a service as the determining dimensions for service quality. Their main proposition is that a series of distinct gaps occurring on the service providers' side influence the consumer's perception of service quality as experienced during consumption. The ten dimensions that they proposed as part of their initial research (Anantharanthan Parasuraman, Zeithaml, and Berry 1985) are as follows:

1. Reliability: is derived from consistency of performance and dependability.
2. Responsiveness: is derived from the willingness of the providers' employees' and is further dependent on timeliness.

3. Competence: is derived from the possession of the required skills and knowledge on the part of the service provider.
4. Access: derives from the ease of contact and approachability to a service provider (and their employees)
5. Courtesy: is derived from relationship characteristics like politeness, respect, consideration, and friendliness of contact personnel.
6. Communication: is derived from the attitude of keeping consumers informed as well as actively listening from them.
7. Credibility: is derived from traits like trustworthiness, believability and honesty.
8. Security: is derived from a sense of freedom from danger, risk or doubts.
9. Understanding is derived from understanding the service consumer's needs, trying to understand them.
10. Tangibles: is derived from the physical evidence of service provision including facilities, personnel, equipment and perception about other service consumers.

The ten dimensions above were later studied for further association with perceived service quality that lead to their consolidation into five dimensions, consisting of three original and two new ones that were combined from the rest. This was presented in the form a concrete service quality measurement instrument popularised as SERVQUAL(A Parasuraman, Zeithaml, and Berry 1988). The SERVQUAL instrument is therefore based on the following five dimensions:

1. Tangibles: include physical facilities, equipment, and appearance of service personnel.
2. Reliability: includes the ability to perform the promised service dependably and accurately.
3. Responsiveness: includes the willingness to help customers and provide prompt service.
4. Assurance: includes the knowledge, skills and courtesy of employees and their ability to inspire trust and confidence.
5. Empathy: includes the caring, individualized attention the service provider provides to its customers.

Of these dimensions, the last two i.e. assurance and empathy encapsulate the seven original dimensions from the initial research (Anantharanthan Parasuraman, Zeithaml, and Berry 1985) namely, communication, credibility, security, competence, courtesy, understanding/knowing customers, and access, which the authors found not to be so distinct after further research using a two stage purification scale.

2.2.3 Hybrid Multi-level Models

Several scholars have proposed modified, advanced versions that employ factors from either, the models based on the Nordic perspective or the American perspective, or a hybrid combination of factors contributed by both the perspectives. In these models, the perceived service quality is recognized as a complex, higher-order construct, that derives from additional levels of factoring attributes as contributing to the service quality.

In one of the most comprehensive of these multi-level models, Dabholkar, Thorpe, and Rentz (1995), propose that perceived service quality, especially in the case of retail based services, is derived from five distinct dimensions on the primary level. These are: physical aspects, reliability, personal interactions, problem solving and policy. Of these, physical aspects derive further from the appearance and convenience aspects of service as experienced by the customer. The reliability aspect derives from the delivery of the promises as part of the service value proposition as well as delivering them in the right manner which is coherent with Lehtinen and Lehtinen's (1991) construct of process quality. The third primary dimension, personal interaction, further derives from the courteous and/or helpful nature of the service provider's staff as well as the confidence that the complete service delivery process inspires in the service consumer. These ideas are rooted in several of the models discussed previously, including corporate quality (Grönroos 1982b), service delivery (Lehtinen and Lehtinen 1991) and empathy, assurance, reliability and responsiveness (A Parasuraman, Zeithaml, and Berry 1988).

Another dual-level model, proposed by Brady and Cronin Jr (2001) has interaction quality, physical environment quality and outcome quality as the primary level dimensions of perceived service quality. These can be traced back to Grönroos' (1982b) dimensions based on technical quality, functional quality and corporate image. The primary level dimensions further derive from secondary level dimensions. Interaction quality is based on the service provider employees' attitude, their behaviour towards the service consumer as well as perceived expertise in providing the service. Physical environment quality derives from observable physical assets such as ambient conditions, design as well as social factors that lead to a formation of word of mouth behaviour. Social factors are also proposed as a contributing dimension to the outcome quality along with waiting time, tangibles and valence. Valence as a dimension is a notable addition as an attribute that is said to capture the service consumer's belief about the outcome being good or bad irrespective of their evaluation of any other aspect of the service. This is based on the authors' research indication about factors that are outside the direct control of the service management.

There is a pertinent suggestion of inclusion of the social action-based dimension, for the measurement of perceived service quality in the more recent literature on the topic. In a confirmatory factor analysis approach based study that studies SERVQUAL in detail and then builds on it to suggest a more elaborate model Sureshchandar, Rajendran, and Anantharaman (2002) suggest that

SERVQUAL (A Parasuraman, Zeithaml, and Berry 1988) better accounts for the human element as well as the tangibles aspect of service delivery. What it lacks are the dimensions related to the core service (in the form of service content i.e. the features offered as part of the service mix), the non-human element of service delivery (i.e. processes, procedures and parts of the service that can be perfectly standardized using self-service and automated mechanisms to deliver a seamless, unfluctuating experience to the service consumer and finally the social responsibility based dimension that is linked to the social image and goodwill and therefore the overall evaluation of the service provider in the service consumer's mind. This model, in a very subtle but empirically sound manner, combines the dimensions from both the Nordic and the American perspectives in a condensed but well explained study.

A few other models have been proposed by researchers that cater to very specific sectors of the service economy such as retail services, organizational services, hospitality services etc. But these models are deemed too specific and narrow in their approach to be discussed in context of this work. Also, most of these models are based on one of the models discussed previously and are an extension of either the American or the Nordic perspective to perceived service quality. The discussion about various models for measuring PSQ is summarised in (Table 2).

Table 2 Proposed Models for Measurement of Perceived Service Quality

#	Nature of model	No. of dimensions	Dimensions	Perspective	Reference
1	single level	3	Technical Quality, Functional Quality, Corporate Image	Nordic	(Grönroos 1982b)
2	single level	3	Physical Quality, Interactive Quality, Corporate Quality	Nordic	(Lehtinen and Lehtinen 1991)
3	single level	2	Process Quality, Output Quality	Nordic	(Lehtinen and Lehtinen 1991)
4	single level	3	Service Product, Service Delivery, Service Environment	Nordic	(Rust and Oliver 1993)
5	single level	10	Reliability, Responsiveness, Competence, Access, Courtesy, Communication, Credibility, Security, Understanding, Tangibility	American	(Anantharanthan Parasuraman, Zeithaml, and Berry 1985)
6	single level	5	Tangibles, Reliability, Responsiveness, Assurance, Empathy	American	(A Parasuraman, Zeithaml, and Berry 1988)
7	multi-level	5	Physical aspects, Reliability, Personal Interactions, Problem Solving, Policy	Hybrid	(Dabholkar, Thorpe, and Rentz 1995)
8	multi-level	3+9	Interaction Quality, Physical Environment Quality and Outcome Quality	Hybrid	(Brady and Cronin Jr 2001)
9	multi-faceted	2+3	Human Element, Tangibles, Core Service, Non-Human Element, Social Responsibility	American	(Sureshchandar, Rajendran, and Anantharaman 2002)

2.3 Perceived Service Quality in Digital Services

Perceived service quality in case of digital channel-based services is a much more fragmented and vaguely published construct because of two main reasons. Firstly, the concept of digital channel-based services is not well-defined in service marketing literature. Some of the keywords relating to digital channel-based services that populate the literature when searching for perceived service quality are "web portals", "electronic service", "E-service", "virtual service", "retail service quality on the internet", "technology-based self-service" and so on. Secondly, all the published research borrows and derives heavily from the general research on perceived service quality as discussed in the previous section. The general research, although a good starting point, is heavily based on the physical aspect of service provision and is not so well constructed in cases where the channel of service provision might be digital and dependent on self-service proficiency of the service user (ability to use the basic features of the digital service provision infrastructure)

The above facts call for an extended effort towards publishing of a well-researched and academically agreed upon nomenclature for digital service provision related terminology in order to defragment the existing research as well as fruitfully channelize the future research in the area. Nonetheless, this chapter discusses the published research related to services that involve a digital channel of provision in some form.

2.3.1 Information Systems Based Research into Perceived Service Quality of Digital Services

One of the earliest research related to perceived service quality of digital channel based services was conducted by Dabholkar (1996) where she recognised the need for concrete models for evaluation of services which use technology as a form of self-service aid in provision of the service to the consumer. As part of the research, she proposed two different models.

An attribute-based model which is a cognitive evaluation of characteristics associated with technology-based self-services establishes the basis for service consumer's intention for using technology-based self-service. This model derives from five sub dimensions, namely ease of use, speed of delivery, reliability, and enjoyment and control that a consumer expects to have while using the service. According to the author, these factors predict the expected quality that a service consumer thinks he can derive from the use of a service and has a major role in the consumer's decision to use a technology based self-service option while availing of a service.

A second overall effect model which is more in tune with the macro level, process view of the service as envisaged by both Lehtinen and Lehtinen (1991) and Grönroos (1982b) is based on an affective process of evaluation that a service consumer is likely to perform regarding their disposition towards technology

based self-service options. According to the author, the two factors that determine the perceived service quality of a technology-based self-service in this case are firstly; the consumer's own attitude towards using technology and technology-based products. Therefore, the consumer's perceived ease of use of a specific technology is likely to play a major role as a deciding factor. On the other hand, the perceived need for interaction with the service provider's employees in order to understand the process of usage or overcome any active service based difficulties so as to get the usage right is the second deciding factor which will ultimately shape the perceived service quality on a macro, overall level in case of services which provide a technology based self-service model. The uniqueness of this model lies in the fact that it recognises the special onus that lies with the user of the service in the form of his attitude towards usage of technological products. This direction, at the time of publishing of the cited work (Dabholkar 1996) was an important and novel direction that needed to be pursued and researched further. Nonetheless, it will form an important part of the further discussion as part of this thesis report.

In another study about the perceived service quality of information presenting web portals Yang et al. (2005), establish three major types of interactions:

I. Between the service consumers and the employees of the service
II. Between the service consumers and the service
III. Among peer consumers of similar services via personal (email) or social communication (social media platforms) tools.

Their proposed conceptual framework for measuring the perceived service quality is based on the foundations of the technology adoption model (Davis 1989) and breaks down the quality concept into distinct drivers – information quality and service quality. Of these, the information quality further derives from the usefulness of content and the adequacy of information supplied to the service consumer by the service provider. On the other hand, the system quality dimension is dependent on factors such as usability, accessibility, information privacy and security as well as the interactions as defined by the authors.

2.3.2 Service Marketing Based Research into Perceived Service Quality of Digital Services

The service marketing-based research into perceived service quality of digital systems borrows heavily from the existing SERVQUAL literature and tries to incorporate the technology-based element into the existing models while reducing the reliance on human interaction-based dimensions proposed by the original instrument.

In a proposed multidimensional measure of perceived service quality online, Long and McMellon (2004) use measures that are reflective of the original SERVQUAL dimensions, but more relevant to technology reliant services that

depend less on interpersonal interactions. In this model that is specifically tailored to online retail based digital services, the following dimensions were proposed as a deterministic measure of perceived service quality:

1. Tangibility: is a supposed measure of the physical evidence of the service and includes factors such as visual appeal of the retail website, ease of search, ease of navigation, relative complexity, and quality of information presented etc.
2. Reliability: is a measure of the dependability and performance of the retail website and includes factors such as keeping the retailers promise, easy access and understanding of the billing process, shipping of the correct merchandise and minimum need for personal communication with the service provider.
3. Responsiveness: is a measure of the individual attention provided to the consumer and includes factors such as promptness of a general service, promptness of a special service, willingness to help consumers prompt replies to personal communications such as emails, messages and phone calls etc.
4. Assurance: is an indicator of the trust and confidence that an online retail service inspires in the service consumer. This includes factors such as consumers being able to trust, customers feeling welcome, availability of secure transactions as well as privacy and confidentiality assurance statement for the service consumer.
5. Empathy: is indicative of the understanding of the consumer's feelings and includes factors such as personal attention (if at all), having the consumer's best interest at hearts etc.
6. Communication: is an indicator of the clarity of content as well as purpose and intent based on factors such as minimal advertising banners on the retail website, availability of clear instructions, exception and error messages that convey feelings of sympathy and assurance, welcome letter / email, active feedback mechanisms, availability of authentic user reviews for items, personalised newsletters and follow-up to confirmed orders.
7. Ordering, Shipping, Packaging: is an indicator of the quality of the actual purchase process and includes factors such as variety of shipping options, consumer friendly return policy, ease of cancellation and good quality, secure packaging for the shipped orders.

These, dimensions although, tailored to a digital channel based online retail service, are quite similar in terminology as well as purpose to the original SERVQUAL dimensions.

While asserting that E-service quality is a concept that is developed from internet marketing and the traditional service quality literature, Santos (2003) defines the concept as an overall evaluation as well as judgement done by the service consumer in order to ascertain the excellence and quality of the e-service

offerings in the virtual marketplace. The definition borrows from the idea that in case of a virtual or digital service, the customers are likely to perceive the service offering in terms of the overall process and its outcome rather than analysing each of the underlying sub processes that make up the complete digital service offering (Van Riel, Liljander, and Jurriens 2001). The author has proposed a model for thus established E-service quality that consists of two primary dimensions that further draw from a list of determinants. These dimensions are:

1. Incubative dimension: The incubative dimension majorly consists of elements that can be designed and developed before a digital service is launched. These elements include – the ease of use, appearance, linkage, structural layout and content.
2. Active dimension: The active dimension consists of elements that must be consistently achieved and maintained throughout the lifetime of a digital service, primarily in terms of the service timeline that the customer has an interface for service consumption. These active elements include – reliability, efficiency, support, communications, security and incentives. The last of these elements i.e. incentive is unique to this model in that it has not explicitly been discussed in other service quality based literature but impresses upon as a legitimate factor for determination of perceived service quality especially in the case of digital channels based online retail services.

Recognising that traditional and extant service quality literature is dominated by research about conceptualisation and measurement of people delivered services, Ananthanarayanan Parasuraman, Zeithaml, and Malhotra (2005) worked on the formerly developed and much discussed SERVQUAL (A Parasuraman, Zeithaml, and Berry 1988) and developed a scale to measure e-SQ (the authors' own acronym for E-service quality). They propose two distinct scales - one for the normal service delivery process, while the other is for the purpose of measuring the quality of service recovery process.

The E-S-QUAL scale that caters to the purpose of measuring quality for the normal service delivery process consists of 22 elements spread across four distinct dimensions. These are:

1. Efficiency: the ease with which service consumer can access and then use the service.
2. Fulfilment: the degree or extent to which the service provider's promises of availability as well as delivery are fulfilled.
3. System availability: the degree to which the service's technical components – website, mobile app etc. function as per prescription.
4. Privacy: the degree of customer information privacy and data security a service affords to the service consumer.

The E-RecS-QUAL scale that caters to the purpose of service recovery process consists of 11 distinct dimensions spread across three different dimensions. These are:

1. Responsiveness: is an indicator of effective handling of any problems arising during the course of service delivery, through the service itself.
2. Compensation: is an indicator of the degree to which the service provider compensates the service consumer for any problems faced during the course of service delivery.
3. Contact: is an indicator of prompt availability of assistance through various channels as deemed fit for the service.

Although, pretty similar in its approach to the other models discussed so far, the novelty of this approach lies in the fact that the authors have segregated the service delivery process from the service recovery process. This supports a better understanding of the nature of overall processes that form the basic framework of an overall digital channel based service.

In a more recent service marketing based approach towards measurement of perceived service quality in digital channel based hybrid services, Nasr, Eshghi, and Ganguli (2012) have utilised a consumer value chain framework in order to better understand the stages that the consumers go through in acquisition and consumption of such hybrid services. Since the target phenomenon of study is a hybrid service (involving both the human as well as digital channel to a large extent), the authors have come up with 18 dimensions to measure service quality in such kind of services based on the three identified stages as part of the consumer value chain framework –

I. Initial contact and purchase
II. Service usage and consumption
III. Service recovery

The first identified stage of the framework i.e. Initial contact and purchase consists of pre-purchase decisions based dimensions, such as ease of subscription, tangibles, corporate image and price.

The second identified stage of the consumer value chain framework i.e. service usage and consumption consists of use phase dimensions such as core service quality, reliability, staff competence, relational quality, customer service, call centre quality, and a number of technological quality related indicators such as technological ease of use, technological reliability, technological security, technological customization, technological information quality, technological convenience, and technological speed.

The third stage of the consumer value chain framework i.e. service recovery derives from recovery phase dimensions such as recovery from problems and possible compensation. This framework has not been empirically tested but is

based on suitable references from both information systems and service marketing based literature about perceived service quality. The discussion about all the proposed models for measuring PSQ of digital services is summarised in (Table3).

Table 3 Proposed Models for Measurement of Perceived Service Quality of Digital Services

#	Nature of model	Nature of Digital Service	No. of dimensions	Dimensions	Reference Discipline	Reference
1	Attribute based	Technology based Self-Service	5	Ease of Use, Speed of Delivery, Reliability, Enjoyment, Control	IS	Dabholkar (1996)
2	Overall Effect based	Technology based Self-Service	2	Perceived Ease of Use of Specific Technology, Perceived Need for Interaction (with Service Personnel)	IS	Dabholkar (1996)
3	Technology Adoption based	Information Presenting Web-Portals	5	Usefulness of Content, Adequacy of Information, Usability, Accessibility, Information Privacy and Security, Interactions	IS	Yang et al. (2005)
4	SERVQUAL based	Online Retail	7	Tangibility, Reliability, Responsiveness, Assurance, Empathy, Communication, Ordering, Shipping, Packaging	Service Markekting	Long and McMellon (2004)
5	Overall Evaluation based	Virtual Marketplace	2	Incubative Dimension (Ease of Use, Appearance, Linkage, Structural Layout, Content), Active Dimension (Reliability, Efficiency, Support, Communications, Security, Incentives	Service Marketing	Santos (2003)
6	SERVQUAL based	e-SQ (E-S-QUAL)	4	Efficiency, Fulfilment, System Availability, Privacy	Service Marketing	Ananthanarayanan Parasuraman, Zeithaml, and Malhotra (2005)
7	SERVQUAL based	e-SQ (E-RecS-QUAL)	3	Responsiveness, Compensation, Contact	Service Marketing	Ananthanarayanan Parasuraman, Zeithaml, and Malhotra (2005)
8	Consumer Value Chain Framework based	Hybrid (digital channels based) services	3xn	Initial Contact and Purchase, Service Usage and Consumption, Service Recovery	Service Marketing	Nasr, Eshghi, and Ganguli (2012)

2.4 Re-Conceptualisation of Perceived Service Quality of Digital Services

Based on the review of literature from service marketing and information systems field in the previous sections, it becomes obvious that there is a large and rather ambiguous and heterogeneous literature about perceived service quality, which is conveniently modified and adapted at will to digital services research. This literature has only led to a furthering of confusing terminology and therefore gaps around digital channels based services such as E-commerce, E-retail, hybrid services, web-based services and so on with a lot of competing terminologies, definitions and frameworks which are in many cases, overlapping but not enriching. This impedes the progress in producing high quality, practically applicable research with regards to perceived service quality of digital services. In order to better understand the quality drivers and determinants for measurement of perceived service quality a whole rethinking of the very concept of perceived service quality is required. A few recent call-to-action specific research papers make this requirement even more important.

In order to present these important arguments in favour of the whole reconceptualization process, the term digital service itself needs to be defined for the sake of coherence. A recent working definition proposed by Tate et al. (2014) is adopted for this purpose. They define digital services as,

> *The design, development, implementation, delivery, use, extension, facilitation, correction and ongoing management of digital assets that can both be used alone or in combination with other assets in order to obtain valuable outcomes for stakeholders.*

This definition incorporates all the modern-day elements that make up the provision and delivery of digital services.

2.4.1 Outdated Definitions, Dimensions and Paradigms

The measures of digital service quality in use, which have been adapted from a combination of both service marketing and information systems based research are based on paradigms and definitions from the early 80s when service research was in its infancy with a focus on forking from the goods-dominant viewpoint and yet comparing and contrasting with it. Tate et al. (2014) argue that these models are rather irrelevant for measuring the quality of modern-day digital services that incorporate a host of resources being contributed by different partners of the service ecosystem as well as the new age consumer's perspective that seeks and assesses values in many different ways.

2.4.2 The Special Nature of Digital Services

The traditional definitions from service marketing that establish the nature of service, focus on tenets such as intangibility, heterogeneity, perishability as well as inseparability (of the production and consumption) process. However, modern day digital services, as explained in the working definition in 2.4 are entirely different in nature from the traditional, service marketing notion of a service. Most digital services can be iteratively improved until they are standardized. Therefore, they are not entirely heterogeneous in nature given that the human element in service provision that is most responsible for heterogeneity is minimal. They are available in the form of ubiquitous information systems (Vodanovich, Sundaram, and Myers 2010) as web based portals, mobile apps, wearable gadget based apps and are considered much more tangible than the normal service. Finally, digital services are almost always, developed independent of the consumption process and are perishable only in terms of the user session based experience (Tate and Evermann 2010a).

2.4.3 Digital Services as Information Systems

Digital services with their existence primarily based on modern day information systems are a case of research where service marketing has been the reference discipline for drawing on the vast research on services. But, with the growing incoherence in service marketing with respect to the nature of services, the debate has come to a point where some researchers have called for abandoning service research as a special field altogether and integrate it with general marketing and management. In such a scenario, Tate et al. (2014) argue that with the extensive research in information system success and related quality perceptions, information systems researchers are better placed to hold forte and present and publish theories about the characteristics of quality determining dimensions in digital services.

2.4.4 New Age Marketing Paradigm Focusing on The Service Consumer

The new age paradigm of value co-creation, where the proponents (Vargo, Maglio, and Akaka 2008) suggest that the consumers contribute their own resources (including time and competencies) to co-create value in a service ecosystem is especially relevant to the digital services based on social media components, relying on user generated content. None of the previous service marketing research pertaining to perceived service quality, particularly for digital services, takes this perspective into account.

By presenting service quality research and its basic fundamentals as well as extended conceptualisations in a chronological perspective, this research has so far established the academic linkages between product marketing and service

marketing disciplines and later the service marketing and information systems fields. As discussed, the majority of measurement approaches derive from previous research in service marketing and present perceived service quality as a construct where the onus of improvement lies solely with the service provider while the service consumer is presented as a consumer and subsequent evaluator of quality. This is in stark contrast with new age marketing paradigm as well as recent research in the field of information systems which seeks to co-create value with the user at the centre of a value constellation as a pro-active social actor rather than a solitary individual consumer. This new age paradigm therefore presents a compelling case on developing a unique understanding of perceived service quality from the viewpoint of the user. Based on SD-Logic (Vargo, Maglio, and Akaka 2008), there is a recurring suggestion for reimagining the construct of a digital service user as we currently know and apply this all over again in order to formulate a new way of understanding Perceived Service Quality for digital services (Tate et al. 2014) by forming an understanding of the broad-based value drivers of the digital service user.

3 SERVICE DOMINANT LOGIC

Vargo and Lusch (2004) initially conceptualized Service Dominant logic in order to challenge what they termed, the *then popular*, Goods Dominant logic, describing it as the (then) dominant paradigm for marketing. Service Dominant Logic predominantly focuses on explaining service marketing. In addition, there has been considerable research, that seeks to extrapolate the tenets of S-D logic to provide an alternate view point for understanding of different processes that a firm undertakes as part of service provision (Day et al. 2004). (Gummesson, Lusch, and Vargo 2010) opine that S-D Logic has a unique offering to management disciplines and economics by seeking to understand the market as well as market offerings from a holistic as well as process perspective. They encourage undertaking research that deals with multiple levels of aggregation on levels as different as business, customer, government, political and macro-economic – since all levels interact with and influence each other. However, in the decade since Vargo and Lusch (2004) came forth with S-D Logic, a large proportion of subsequent research has focussed on discussing, debating and building on the existing tenets and thereby contributing new knowledge to service marketing in general and S-D Logic in particular. In this particular regard, some of the notable mentions are the works of Grönroos (2008), who opines that the foundational value creation concept of value-in-exchange as put forth by the S-D Logic doesn't allow the supplier (service provider) to be a value co-creator and recommends adopting what he terms as Service Logic – with value-in-use as its foundational value creation concept. Grönroos and Ravald (2011), who challenge the S-D Logic viewpoint about actual value co-creators, and the role of the firms by concluding that the process of creating value consists of two conceptually distinct subprocesses. In what they describe as an exploratory research around the topic, Heinonen et al. 2010 argue that both the G-D Logic and S-D Logic are provider dominant and hence advocate a "customer dominant" logic that looks at value creation from an actual customer centric viewpoint – where value-in-use, customer's own context as well as his experience of service is the main areas of focus. There has been a critical examination of the work of Vargo and Lusch (2004) not just from a theoretical standpoint but also from the strategical narrative of the all-

conquering paradigm with Miles (2014) claiming that the foundational academic work behind the S-D Logic is an attempt at creating a powerful narrative with the choice of framing vocabulary, particularly words such as "logic", "paradigm" and "evolution" helping in supporting the persuasive narrative by creating a rhetorical effect, wherein, the focus is on positing that the whole paradigm seeks to save the science of service marketing from potentially destructive struggle for existence by providing a revelatory shift in perspective. The scathing criticism notwithstanding, it is indeed, however, a constant theme in associated literature, that S-D Logic as a theoretical lens has not been able to explain how or why the collateral shift in a dominant paradigm came about and how the understanding of this evolution has (if at all) been able to improve services as consumers experience them today. In other words, has the knowledge and understanding offered by the S-D Logic been able to improve help service providers improve services so as to change the customer's perception of the quality of services being offered to them? In recent follow up research, Vargo and Lusch (2017) claim that S-D Logic and related research has matured to a point that it has been consolidated into a small set of core axioms which sets it up in a good position to advance further into a general theory of the market or better still, a general theory for understanding value co-creation. However, this all-encompassing theory, according to the authors, will still require the support of midrange theoretical frameworks that may be partially supplemented by theories outside of service marketing. This research report is one such attempt at understanding the Perceived Service Quality, particularly with respect to digital services, from the view point of value creation.

There is no well-known and established academic piece of work exploring the linkage between S-D Logic and quality or more specifically, the Perceived Service Quality. There are however, works calling for action in this particular direction such as the one by Tate and Evermann (2010) and more recently, Tate et al. (2014)

This research, seeks to build on existing recent knowledge in the field of service marketing, supplemented by academic frameworks derived from the field of information systems in order to understand how quality of digital services is perceived. Hence, the author does not further explore the available literature that critically analyses, compares and (or) contrasts contemporary research around building the new, all-conquering narrative for a service centric paradigm. However, academic discussions that seek to build and improve upon the S-D Logic such as Service Logic (Grönroos 2006) have been used for building up the theoretical framework that forms the core of this thesis. As made clear by Grönroos (2011) himself, Service Logic seeks to build on the foundational premises of S-D Logic, by further considering and developing them as part of the process of scholarly research, thereby presenting Service Logic as the next stage of S-D Logic.

As explained earlier, the primary purpose of S-D logic is to shift focus in both scholarly research as well as marketing, from exchange of products to the exchange of services (Vargo and Lusch 2004; Gummesson, Lusch, and Vargo 2010). This shift can be readily observed in terms of digital services, where, in the

last decade or so, the consumption happens in a connected environment - the service consumer consumes the service from one of (but not limited to) web based portal, a dedicated market store application for a particular OS (popularly termed as Apps and available for Apple's iOS, Google's Android, MS's Windows operating system as well as server Linux OS distros), or a dedicated hardware device which runs a digital service at its core in order to provide an interface for the service consumer with the service provider (e.g. devices that run a dedicated OS or firmware or even modern day kiosks).

S-D logic posits that erstwhile service systems are better imagined as self-contained, self-adjustable systems of actors that seek to integrate resources. These actors are connected to each other both directly and indirectly through shared institutional reasons as well as for mutual value creation via the exchange of service(s). This system is what (Vargo and Lusch 2011; Lusch and Vargo 2014) have described as a service ecosystem. In essence, this means that S-D Logic (and its suggested improvements) provide a holistic lens to view the complete process of consumption of a digital service while facilitating a thorough virtual visualization of exchange(s) that forms the core of the service. This should be well explored in order to understand how perceptions of quality are formed and evolve around the service experience lifecycle (from a service consumer perspective) in an ecosystem.

One of the criticisms of S-D Logic has been the build-up of rhetoric in order to enforce the paradigmatic nature. It's for this very reason, however, that S-D Logic has been well constructed and explained in academic literature. In their follow-up book to the seminal academic paper Lusch and Vargo (2014a) explain the four foundational concepts of S-D Logic around which the "lexicon" is built up – actors, resources, service and the value. Being the fundamental basis of all exchange, service is the umbrella concept of these. According to the authors, service can be described as the process where in actor(s) use their skill(s) and knowledge (later described as competencies) for mutual benefit of other actor(s) in the service ecosystem – the previously defined self-sufficient entity. Goods that have been at the centre of the erstwhile G-D Logic and seen as value embedded entities are just another mechanism for value provision (Gummesson, Lusch, and Vargo 2010; Lusch and Vargo 2014).

3.1 The Service Dominant Logic Lexicon

In order to understand how S-D logic posits its elementary aspects and how they can be used as building blocks for an understanding of value creation, the various terms as explained in the S-D logic lexicon are further discussed and explained here forth.

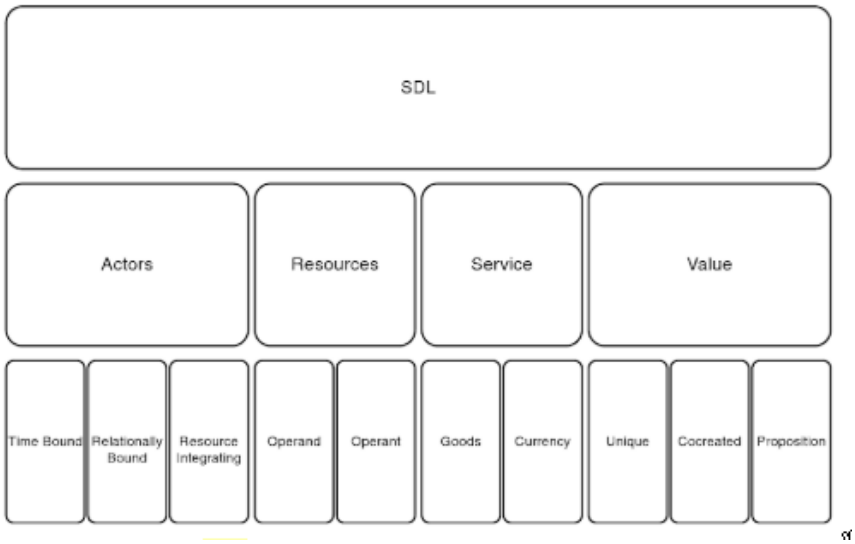

Figure 1 The Service Dominant Logic Lexicon (Lusch and Vargo 2014a)

3.1.1 Actors

The initial reference to actors has been as people (or other entities) (Vargo and Lusch 2004) - atomic, singular entities that "act" with a specific set of goals in sight. This has been refined over time to actually refer actors as purposeful entities acting within certain limitations in order to co-create environments via individual or collective actions (Lusch and Vargo 2014). It is open to debate whether a system that is a combination of processes performed by individual actors themselves is an actor or not. Since actors are presumed goal and purpose bound, they are also bound by time as a factor and therefore their unique experience of a service in time is an ongoing process. Their behaviour during this continuing experience is altered as result of what they have encountered and perceived in the past, therefore implying, that it is possible to predict their behaviour in the future (Lusch and Vargo 2014). The actors also have various linkages or relationships with other actors based on whether these actors are part of the same ecosystem or they belong to overlapping ecosystems. Lusch and Vargo (2014a), tend to differentiate actors as economic or social actors interacting with others with the aim of integrating resources, exchanging services and ultimately, creating value. In principle, the main aim of interaction between actors is to better achieve the individual actor's goals leading to an eventual integration of resources.

3.1.2 Resources

Anything that an actor uses in order to support the creation of value is termed a resource (Lusch and Vargo 2014). S-D Logic has, from the very beginning, differentiated resources into two main types – Operand and Operant resources. Oper-

and resources are dormant, passive resources that need to be acted upon to extract value out of them while operant resources are the kind that are in effect tasked with extracting value out of operand resources. This differentiation of resources that Vargo and Lusch (2004) stress upon, draws from resource advantage theory which broadly classifies all physical, tangible resources as operand and all information centric, relational resources as operant (Day et al. 2004; Madhavaram and Hunt 2008). Actors require suitable knowledge, skills and expertise – operant resources to extract value out of operand resources within an ecosystem. Also, resources that cannot be acted upon immediately are classified as potential resources. According to Vargo and Lusch (2008), potential resources can be "operated upon" by operant resources. This seemingly implies that only operand resources can always be potential resources. However, in the world of digital services, where user acquisition and retention are much in vogue, there is a need to understand that operant resources can hold as much of potential as operand resources. Therefore, the classification of certain resources as "potential" resources does not quite hold when it comes to digital services. All resources are potential resources and when the operant acts upon the operand, the potential of both is realised. This sentiment is echoed by Löbler (2013) who opines that anything that has the potential of integrating into the process of value creation is a resource. Building on this, actors are also described as resources where in active actors are classified as operant resources and passive actors are classified as operand resources. However, value only emerges through the use of operand resources by operant resources and cannot be created in isolation by the operand resources. Lusch and Vargo (2014a) posit that if operand resources are used by operant resources for acting on other resources for extracting value from them, they turn into operant resources. This is a significant understanding and implies that

a) operant resources have the ability to sort through and pick i.e. acquire operand resources
b) operant resources have the ability to convert operand resources to convert intermediary operand resources into operant resources.

It's this proverbial golden touch of operant resources that leads S-D Logic to claim that operant resources are the source of all competitive advantage – they can identify and act on potential resources to extract value.

According to S-D Logic, all actors have an ultimate goal of maximising the potential value by employing the best combination of resources – what has been described as maximum resource density. Resource density is concept derived from Normann (2001) which is explained as the combinations of resources employed in order to create value.

Digital services as enablers of service provision, often fall in the category of operand resources. Actors with their resources, are required to act upon them to extract value out of digital services. However, in multiple cases, one of these actors integrating their resources for extracting value, might be a system or what might be classified as a digital service. While recommending that technology be considered as an operant resource, Akaka and Vargo (2014) argue that doing so provides for a systematic study of integration of technology as a resource with

an all-encompassing viewpoint. For example, modern day APIs that integrate fragmented digital services into condensed ones are an example of an operant resource that is not "human" in nature. It may however be argued that the API is a dormant operand resource that needs an actor to act upon it. This and many such citable examples bring out the fallacy of S-D Logic when applied in its direct form to digital services of varying nature – it cannot explain and therefore support all its premises in case of digital services where the lines between actors, resources, and ecosystems are often blurred. The author of this thesis makes conscious efforts to point out these fallacies and the consequential unique nature of digital services with respect to digital services, at every possible opportunity.

3.1.3 Service

In its simplest form, a service is a self-beneficial activity conducted by an actor – i.e. application of resources for the benefit of an actor which may or may not be self (Lusch and Vargo 2014). Several of these activities carried out in parallel within one or overlapping ecosystems, leads to the service process – the process being the sum of these value creation activities and not the outcome. Observing the overall process (Vargo and Lusch 2008b) not the eventual outcome makes the evaluation of service more holistic. Based on the traditional idea of a service where in its considered as an intangible activity (Vargo and Lusch 2008b), one of the ways of provisioning a service is the directly from the provider to the consumer (Pels and Vargo 2009). The other way of provisioning a service, where an intermediary distribution mechanism or goods are used to serve the consumer (actor) (Lusch and Vargo 2014) is referred to as indirect provisioning of a service. Therefore, S-D Logic differentiates services based on the way they are provisioned (Pels and Vargo 2009) but there is no differentiation between goods and services.

3.1.4 Value

The basic idea of value according to S-D Logic is rooted in a beneficial (implying positive) increase in the wellbeing of an actor (Lusch and Vargo 2014).

However, as explained in 3.1.1, actors are bound by unique purpose as well as time related goals and accomplishments and integrate vastly different resources as part of one or more value creation processes. This is where value perceived by one actor differs from that of another actor for the same service. The understanding of value being relational and based in context (Vargo and Lusch 2008a) is one of the main tenets of SD-Logic.

Since the creation of value is a collective process – *value is always co-created with consumers* - the actors or resources are not able to create or determine the value in isolation, as individuals. And yet, the value is dynamically unique to each actor's own context. Value co-creation occurs in the networks that the actors are part of and build over time.

3.1.5 Service Ecosystem

To understand the concept of a Service Ecosystem as proposed by S-D Logic, Lusch and Vargo (2014) discuss the concept of networks. Networks are more complicated than one to one relationship and exist in the form of what the authors describe as triads. Triads exist so that the same actors may have direct and indirect relationships with another actor. The bigger picture understood by observing second and third level triads explains the service process in a more holistic manner, giving a more realistic perspective of the scale of exchange and interlinkage involved. This perspective explains how an actor at the centre of the currently observed service process is in effect, one of the many such exchanges that influence and are influenced by others. Lusch and Vargo (2014) contend that the static nature of network maps is ill equipped to illustrate the complex flows and exchanges between the actors. Furthermore, since actors are constraint bounds entities with unique contexts, they trace unique paths during their respective service experience, employing varying methods and processes to integrate resources. In order to understand these complex triads that are unlikely to be same for different actors as they evolve, the authors suggest employing a dynamic viewpoint rather than a network map – that of a service ecosystem. S-D Logic defines a service ecosystem as a relatively self-contained and self-adjusting system where actors are connected by the virtue of institutional logic for the purpose of co-creating value by the integration of their resources (Lusch and Vargo 2014; Mars, Bronstein, and Lusch 2012).

Actors can be simultaneously part of different ecosystems making them (the ecosystems) overlap or at times nested within each other (Meadows 2008; Lusch and Vargo 2014). Given that service ecosystems are essentially a resource pool albeit an organised one, they can be acted upon by actors from other ecosystems or by other ecosystems themselves behaving as actors in this case (Maglio et al. 2009). It is therefore pertinent to think of them as a resource as well. As discussed in 3.1.3, service, in essence, is a process. Therefore, a service ecosystem can be holistically viewed as a culmination of several processes undertaken by actors in order to integrate resources and create value as a build-up to one or more service(s). Most research agrees that the ultimate objective of a service ecosystem is co-creation of value by facilitating interactions between actors by the means of exchanges leading up to resource integration (Maglio et al. 2009; Meadows 2008).

3.2 S-D Logic Premises: Understanding, Revising and Identifying

The relevance and popularity of any theoretical paradigm is rooted in its premise. S-D Logic has had explicitly laid down "foundational premises" from the very beginning (Vargo and Lusch 2004). The ten FPs of S-D Logic have been reviewed (Grönroos 2008; 2011a) , critiqued (Day et al. 2004) and explained over again by the original authors since they were first laid down. In the following section, we

develop an understanding of the then foundational premises, revise them based on the critique received in academic literature and finally identify the foundational premises that are relevant to value creation (Grönroos 2011a) and therefore essential for building a perspective of value from the viewpoint of digital services. This perspective is help visualize Perceived Service Quality of digital services in a different light with value creation at the central viewpoint for all service processes.

3.2.1 FP 1: Service is The Fundamental Basis of Bxchange

This is the core premise that seeks to explain the nature of interactions between actors. As discussed in 3.1.5, all the actors that are part of a service ecosystem are engaged in applying operant resources on other resources (both operant and operand) in order to create value. Since, not all actors have the same resources (in the form of knowledge, skills and competencies, they exchange the application of these resources, in the form of activities, to create optimal value, hence maximizing their potential and creating what is described as service - the fundamental basis of all exchange (Vargo and Lusch 2004; Lusch and Vargo 2014).

Differing in his perspective of what motivates actors to integrate resources, Grönroos (2011) argues that the main motivation for actors to integrate resources is a personal gain. For a user or customer (actor) the gain could be achieving long-term objectives or short-term goals and getting better at what they are trying to do. For the service provider (actor), one of the motivations could be to acquire long term users of their service which in turn may lead to more future users – ultimately source(s) of revenue. This reciprocal exchange, culminating in value creation, is what Grönroos (2011) believes is fundamental basis of a business centric exchange. The service is just one of the several possible mediating factors. This explanation holds especially true for digital services. Several new age users of modern digital services are casually looking at achieving short to long term objectives. The service provider engages with different kinds of users at different levels. It tries to understand the motivations and objectives of different levels of users and helps them achieve their specific, immediate goals which in turn helps the service acquire more users – either by the word of mouth or through organised marketing processes. In this process, the digital service is only a mediator or better still what can be described as a facilitator.

3.2.2 FP 2: Indirect Exchange Masks the Fundamental Basis of Exchange

Lusch and Vargo (2014) opine that intermediaries such as goods, currencies and organisations are tangible aspects of service that end up masking the service, which, according to FP 1, is the fundamental basis of exchange. In essence, this points to the fact that a service user (actor) is not in touch with actual service that the service provider is creating, because what the user directly interacts with, is these tangible intermediaries.

From the specific perspective of digital services, this is partly true. Most digital services (or parts of the service) are accessible through hardware interfaces that the service provider does not own and in most cases, cannot even influence. The user owns the device and, in most cases, uses the same device for accessing multiple services from multiple providers some of which may even be direct competitors. Mobile devices being a very good example in this case. So, if the intermediary platform does not function to it's optimum, the user is likely to feel dissatisfied and hence perceive a lack of value. However, for digital services, the user also has a unique context that can be interpreted in the form of his own competencies (which can be classified as operant resources). This effectively means that it is more likely than not, that the user identifies correctly, where the issue lies when it comes to shortcomings with a digital service that is being used. Of course, this dissemination of information is affected by the how competent and skilled the user is – how developed the user's operant resources are and therefor different users are likely to disseminate the information related to failure to a different level of certainty. But the service provider has a very good chance of developing the user's operant resources and effectively improve the level of dissemination of information. In effect, a digital service is an indirect exchange in most respects and the users after a certain period of usage tend to see behind the mask and understand the actual service provider and their value propositions.

FP 2 is therefore not considered entirely relevant towards understanding of value in the case of digital services. In fact, while building up Service Logic as a next level for S-D Logic, Grönroos (2011) has negated the usefulness of this premise for any kind of service at all.

3.2.3 FP 3: Goods are a Distribution Mechanism for Service Provision

In its basic form FP 3 (Vargo and Lusch 2004; Lusch and Vargo 2014) does not hold much of a relevance for the specific case of digital services once again unless a service provider is responsible for the end to end experience in its entirety – therefore controlling the hardware, software and related aspects of a service. Most digital service providers don't own the device.

They can, however, influence the choice of device for a user. The most common example for digital services being (hardware) resource intensive games. Most games released to end users come with "recommended" and "optimum" level specs for the device on which they can and should be played for an optimum experience. The device recommendations range from mobile devices to gaming consoles to other proprietary hardware. Looking at it from a S-D Logic perspective, the service provider gains access to its operant resources (the prospective gamers) and makes sure they are able to create the maximum value from their gaming experience by letting them know what device the game works best with. Of course, in the real-life gaming service ecosystem, this is a much more complicated process, where game and hardware manufacturers collaborate with each other and key users in order to publicise each other's new offerings to prospective new users in the gaming ecosystem. In effect, the existing knowledge of

each actors' is used to create new collective knowledge for these actors as well as for the new prospective actors. The creation of new knowledge as a result of interactions between actors has been very well presented in order to reinterpret FP 3 as information being the distribution mechanism for a service (Schulz and Gnoth 2008). As long as the service provider can facilitate creation and propagation of new knowledge related to their service among the actors, they can influence a host of intermediaries that they don't directly control including but not limited to hardware configuration, choice of peer to peer discussion forums, feedback collection processes to name a few.

On critically analysing FP 3, Grönroos (2011) concludes that goods are one of the resources that may be used to transmit a service, other probable resources being information, processes that create and transmit them and so on. Therefore, all resources are transmitting mechanisms however the they don't contain any explicit value in themselves.

3.2.4 FP 4: Operant Resources are the Fundamental Source of Competitive Advantage

As explained previously, in 3.1.2, the core of value creation lies in the actor using his operant resources to act upon other operand or operant resources (Lusch and Vargo 2014). Since operant resources are rooted in knowledge (i.e. skills and competencies of an actor), FP 4 implies that in a competitive market scenario of multiple digital services helping users achieve similar objectives, knowledge would give a service provider an upper hand (Lusch, Vargo, and O'brien 2007). In a traditional, goods dominant sort of market model, the complete onus of improving operant resources - effectively the knowledge, would lie with service provider. However, in the reimagined S-D Logic ecosystem, the service provider stands to gain from improved operant resources of the user of a digital service, since, that would imply that the user is better able to create value out of the operand resource(s) that the service makes available to the user.

The interpretation of FP 4 needs to be extrapolated very thoughtfully when applying all the basics that S-D Logic lays down in the form of its lexicon as discussed before, to the context of digital services. A service provider would do all it can to develop its own (implying its employees') knowledge, skills and competencies so that they can collectively create the best possible service experience for their users. In the same light, the service provider would do well to engage with the users – both existing and prospective, to improve their skills and competencies so that they can derive the most out of the provisioned service (Grönroos 2008). Since operant resources are rooted in knowledge and mostly intangible, they are difficult to copy (the definition of copying as implied by infringement of intellectual property) - they are embedded with the resource or with the actor (Spohrer et al. 2008). The possible loss that the service provider faces in improving the skills of its users as an operant resource, is in the scenario when the users develop their skills to a level sufficient enough for them to discern the value created with a competitor's service as a better and hence switch loyalties. But that

possibility should not deter a service provider from actively engaging with the service user and helping them improve their skills.

3.2.5 FP 5: All Economies are Service Economies

This premise basically seeks to emphasise the point driven home so far by S-D Logic, that the basis of all economic activities from all eras in human history has been an exchange process that leads up to a service (Lusch and Vargo 2014; Vargo and Lusch 2004). The establishment of the true nature of FP 5 by quoting from the economic history of mankind is not especially relevant to the understanding of value from a digital service perspective and therefore not explored further.

3.2.6 FP 6: The Customer is Always a Co-creator of Value

One of the most important premise of the S-D Logic, FP 6 implies that the customer as well as the service provider are together involved in the co-creation of value (Vargo and Lusch 2004). The customer integrates his own resources to the service provider's offering and co-creates value for himself and the provider (Lusch and Vargo 2014; Wieland et al. 2012). The logically simplistic implications of this premise are questioned and refuted by Grönroos (2011), who opines that instating the customer as a co-creator of value implies that the provider is in charge of creation of value and it is the provider's prerogative to invite the user as a co-creator. This is in stark contrast to established knowledge about value being created in the context of usage. A user primarily creates value for himself and portions of this value can be utilised by the service provider by guiding the user to integrate and use resources in a certain manner. But according to Grönroos (2011), it's the user who is a value creator as the main resource integrator.

FP 6 and it's revision as suggested by Grönroos (2011), is fundamental to understanding value creation in a service and forming a concept of perceptions formed by the user while being guided by the provider. Users tend to perceive quality based on their estimates of value that they think they have been able to create or add towards their objectives. In the context of digital services, this can be readily observed in all major applications involving a learning curve. Depending on the complexity of the tool or application, the service provider tries to guide and influence the user using documentation, peer-guided forums and even live support in the form of helpdesk on call or chat. The value, however, is created by the user during the use phase only. It's the perception of value that the provider can influence by facilitating the usage – or creation of value.

3.2.7 FP 7: The Firm Cannot Deliver Value. It Can Only Offer Value Propositions

A value proposition, according to Lusch and Vargo (2014), is a promise or proposal from one actor to another for increasing the former's sense of value addition. As already established in the proceeding FPs, service providers cannot deliver value solely on their own. It has also been established that value is not embedded in goods or any other medium of service provision. Vargo and Lusch (2004) have put forth the viewpoint that the value has to be co-created with the user, reiterated time and again by others (Schulz and Gnoth 2008; Spohrer et al. 2008). In fact, Grönroos (2011) has gone ahead and suggested that value creation is the onus of the user and the service provider has the responsibility of facilitating value it.

FP 7 fits perfectly well with the revision suggested by Grönroos (2011). However, instead of merely promising to add value in the form of a proposition, the firm or service provider needs to interact so that the user becomes a part of the firm's service provision process as a resource integrator and the service provider becomes a part of the user's value creation process by delivering different resources – that have been developed, designed or manufactured by the provider and can be acted upon and integrated by the user. The service provider gets (or actively creates) opportunities for interaction with the user which, if used judiciously, allow the service provider to become a co-creator of value along with the primary value creator – the user. The firm or service provider, however, is a facilitator whether in active or passive manner. Breaking down FP 7 into two parts, Grönroos (2011) argues that part one about firm not being able to deliver value is only partly true because it has the opportunity to co-create value with the user during direct interactions. And due to this very fact, there is a possibility of the firm's as well as user's processes merging into one during direct interactions – providing the firm or service provider the perfect opportunity to move beyond just promising value and facilitate the creation of value, hence becoming a co-creator of value.

This understanding of the user as the primary value creator and the service provider as the facilitator forms the fundamental basis of understanding the process of perceived quality in digital service provision using value as aid. A digital service provider must actively create opportunities to interact with the user during different phases of service provision – starting with ideation and design and going on the feedback collection after the usage phase. How actively the digital service provider creates or identifies such opportunities and actually makes use of these determines how well he facilitates the value creation by the customer.

3.2.8 FP 8: A Service-centred View is Inherently Customer Oriented and Relational

S-D Logic's fundamental belief in the customer being a value co-creator helps understand the nature of the consumer, which in turn helps understand the gradual creation and assessment of value across a service ecosystem. As explained before, S-D Logic defines service as the application of knowledge and skills (operant resources) in order to benefit other actors (Vargo and Lusch 2004). Since the operant resources are unique to the individual actor, the service-centred view helps understand how each unique actor creates value for himself and aids other actors in their value creation processes. Understanding these unique actor types is central to the idea of understanding value in a service and improving the service process. Knowing the individual actors' motivations and objectives for an ultimate act in the service process helps a service provider create opportunities to interact with the customers in their value creation sphere, thereby getting access to their (operant) resources (Spohrer et al. 2008). This access in turn, helps the service provider to improve and optimise the service – both in terms of the value propositions as well as the process of service provision.

3.2.9 FP 9: All Social and Economic Actors are Resource Integrators

As explained in 3.1.1, an entity that creates value as well as new resources by integrating its own resources and those made available to it from other sources is an actor (Lusch and Vargo 2014). These other sources may well be beyond the ones that are made available by the current service ecosystem including the actors' own institutional and non-institutional networks that a service provider may not have any direct influence upon.

FP 9 is a very important in order to drive home the point about actors' linkages and interactions in various networks that are a direct result of overlapping service ecosystems, which is especially true about digital services. The user of a particular application, when studied from that particular service provider's context, is still a user of many other services that range from a direct competitor to an auxiliary service to a non-influencing service, when compared to the service provider for the current point of view. The user however, has been acquiring tacit knowledge, through personal observations, organisational trainings, casual discussions as well as targeted marketing activities related to these other services. And in the moment that the user interacts with this service being observed, all these resources form the 'actor' that the service provider is trying to understand and create value with. How far and wide can the service provider go in order to interact with and understand this socio-economically aware actor, determines how well the provider can optimise the service for the particular user.

3.2.10 FP 10: Value is Always Uniquely and Phenomenologically Determined by the Beneficiary

Having established that value is co-created by the user (Vargo and Lusch 2004; Lusch and Vargo 2014) or co-created by the service provider (Grönroos 2011a), the next logical step would be to develop an understanding of who assesses the value (or its impact). Schulz and Gnoth (2008) opine that assessing the value in use is a challenge given that the actors who eventually create (or co-create) value are bound by unique conditions as explained in 3.1.1.

S-D Logic has initially emphasised on the concept of value in exchange (Vargo and Lusch 2004), where different intermediaries act as value provision mediums with embedded value. Later discourse, especially from Grönroos (2008) has helped develop a narrative of value being primarily created by the user. He states that value is created or emerges during usage which is, in context of a service, a process where user is in charge (primary creator) (Grönroos 2011a). This statement is important since it borrows from, as well as implies, the similarity to perceived service quality where in the quality is perceived throughout the service process and not just at the stage of the eventual outcome (Grönroos 1984; Anantharanthan Parasuraman, Zeithaml, and Berry 1985). He opines that the customers assess the resources that the service provider makes available as part of a service process that aid in creating value. If, in the long run, the resources do not help create the level of desired value, with respect to the actor's objectives, the actor (user) is likely to stop paying in exchange for the service and switch to other available providers and their services. Therefore, according to Grönroos (2011) value in exchange is important but value in use is paramount with value in exchange being a subset of the latter.

To sum up the revision of FP 10 as stated by Grönroos (2011), value is created as well as experienced by the user of a service and the same user uniquely assesses the service experience throughout the service lifecycle in order to quantify the value created for him.

FP 10 and especially the revised version applies in every way to digital services when carefully considered. A user has different resources that he integrates as parts of the service experience. For a mobile service user, these will include, among other things, the kind of device possessed, the level of expertise possessed with regards to usage of the operating system on the device, and the objectives that the user is trying to achieve – what sort of a time frame are they bound to and whether they are hedonic or utilitarian in nature (Van der Heijden 2004). A user based in unique contexts and contributing such diverse resources is likely to perceive each touch point in a digital service experience uniquely and therefore create his own mental assessment of the value created. The establishment of a digital service user as a unique entity is the final fundamental in forming an understanding of what drives value creation, its assessment, thus leading to formation of a perception of service quality during the service experience.

Based on this discussion of S-D Logic foundational premises as well as their suggested revisions by Grönroos (2011) in the form of Service Logic, the following foundational premises (Figure 2) are identified as relevant to building a renewed understanding of perceived service quality using value as an aid. Of these, FP 4 and FP 9 are proposed to be interpreted as is, while FPs 1, 3, 6, 7, 9 and 10 are proposed to be interpreted from their revised forms (Grönroos 2011). FPs 2, 5 and 8 are not considered especially relevant towards the prime objectives of this research. Furthermore, FP 7 as originally proposed by Vargo and Lusch (2004) is spilt into two separate parts for better understanding and it's revised form eventually used for interpreting S-D Logic.

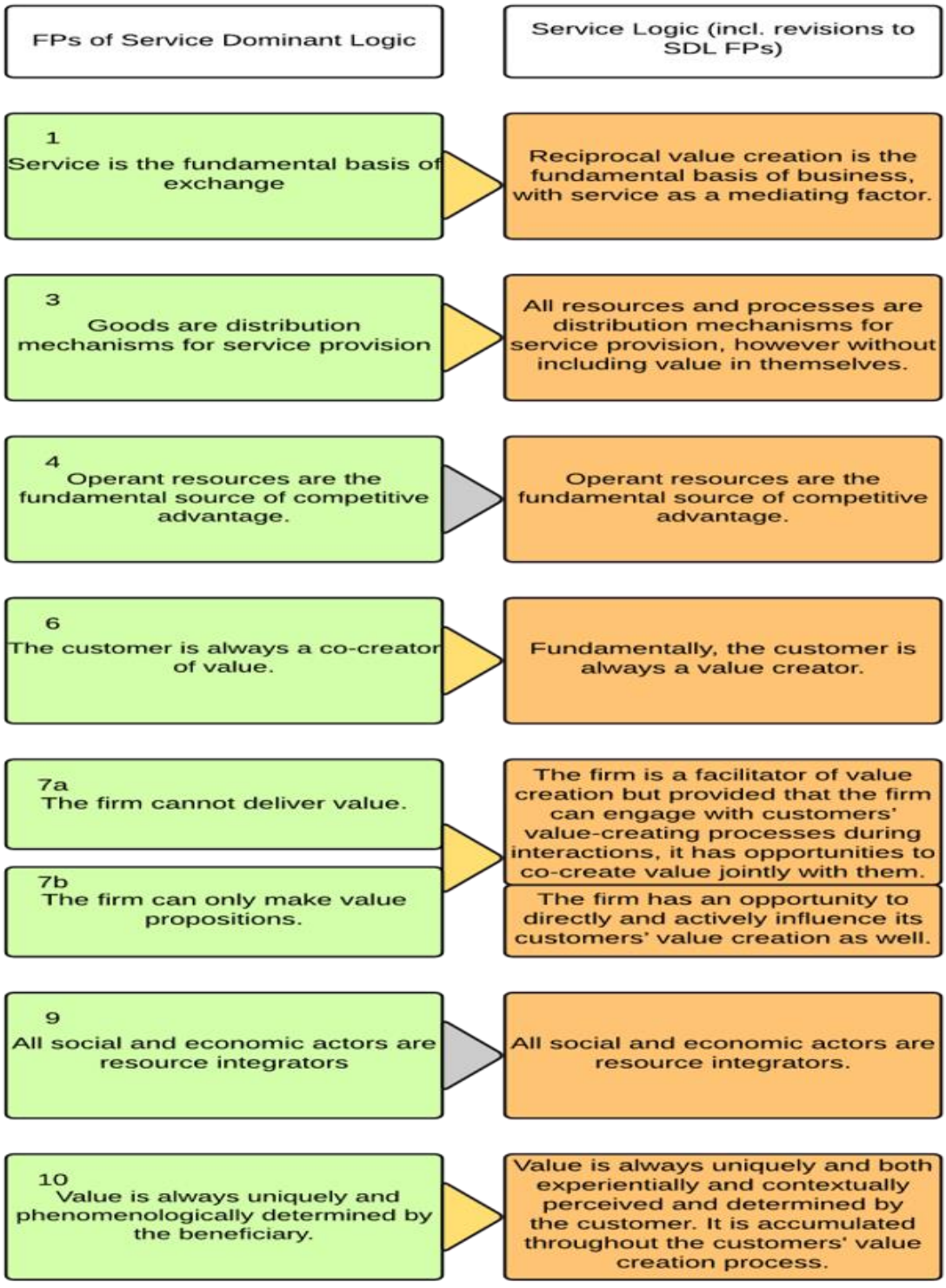

Figure 2 The Service Dominant Logic(Vargo and Lusch 2004; Lusch and Vargo 2014a) foundational premises identified as relevant to this research (LHS) and their revisions as proposed by Service Logic (RHS)(Grönroos 2011a)

**FPs denoted with a grey arrow have been used as is, without considering their suggested revisions*

4 DECONSTRUCTING THE ACTOR

Based on key learnings from the discussion about SD Logic and its revisions, it is evident that actor as an accumulator and integrator of resources and the actor's context during various phases of the service lifecycle are ever evolving. A good understanding of these can help the service provider to better facilitate the creation of value and ultimately the perception of quality based on how well the service provider interacts with the actor, integrates with the actor's sphere of value creation and facilitates the actor's creation of value. Concurring that ideal design for consumer information systems requires refocussing attention on the creation of value as part of the service experience, Tuunanen, Myers, and Cassab (2010) have proposed a framework for value co-creation in consumer information systems where customers value is found to be driven via their own objectives (goals) and eventual outcomes, the overall experience of the service process and the degree of participation or involvement of the user in the service production process. According to the authors, the service system (service provider) facilitates value creation during the service experience by harnessing a socially connected service experience which helps the user to present himself in his context of use of the information system.

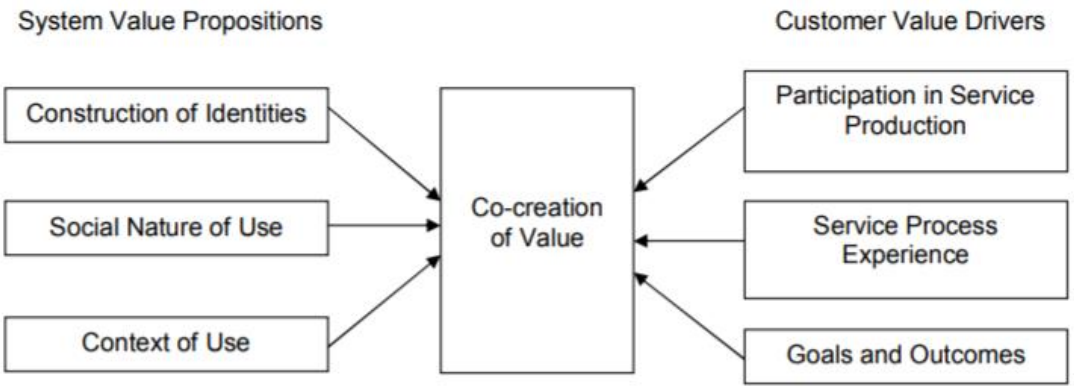

Figure 3 Framework for value co-creation in consumer information systems (Tuunanen, Myers, and Cassab 2010).

While this framework effectively captures the method to achieving value co-creation as an outcome when using the service provider and user as a means, the focus in the next section is on exploring value creation as a means for understanding the construct of a digital service user. For achieving this goal, an attempt is made to rebuild the construct of an actor from the ground by exploring the concept of context and how user forms an image of self that evolves over time during the service experience lifecycle. For visually replicating this evaluation, personas – primarily a service design tool, are explored for creating a narrative in which the service user is the "actor" at the centre of his own value creation space with the service provider trying to interact.

4.1 Context

It is interesting to note that the statement "understanding context is important in order to understand the user" is an oxymoron of sorts, given the dictionary definition of the word context – "*the circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood*." Briefly applied to the S-D Logic model actor, context is the sum total of all circumstances (experiences with touch points, affiliations, linkages to name a few) that shape the way an actor interacts and integrates resources. In essence, to understand the actor is to understand his context.

4.1.1 Context in Service Marketing Literature

One of the major influences from S-D Logic on the understanding of value and its co-creation is that the value is contextual. Vargo and Akaka (2009) suggested revising the prevalent concept of 'value-in-use' to a more service minded concept of 'value-in-context' (Pels and Vargo 2009). The creation and assessment of value by the service consumer is an act of accumulation throughout the service lifecycle which is considered unique to each service consumer and depends to a varying extent on the service experience and context.

As discussed before, the traditional viewpoint of goods being the main resources and marketing processes being 'additional' value creators has been rapidly evolving based on a discussion centred around value and its creation. This has led to reimagination of the 'resource' in modern service marketing. Whereas, according to the traditional viewpoint, a firm's goods and additional processes were the value creation resources - primarily owned by the firm itself, Hunt and Morgan (1995) for the first-time suggested resources as accessible by multiple 'actors' who end up interacting with each other when in need of access to a certain resource. Building on the work of Constantin and Lusch (1994), who suggested that the interaction of actors leads to expansion and contraction of resources, Chandler and Vargo (2011) assert that the joint access to a resource that

is not owned or at least not unilaterally controlled by them causes actors to connect and interact. The interesting observation in this brief recount of evolution of the resource is the accompanied evolution of the actor. Whereas the traditional viewpoint pitched the firm (modern day service provider in the service economy) as the sole actor, the modern viewpoint already acknowledges multiple actors and no definite ownership of the resource(s) which are posited as dynamic entities themselves.

The evolving understanding of resource(s) and the interactions that they cause between actors leads us to understand the occurrence of continuous exchanges as part of a service lifecycle. With numerous actors and their varying control over resources that lead them to interact, it is imperative that some frame of understanding be devised to clarify the contribution of different resources in value creation during the service lifecycle. Context is one such frame of reference that helps understand the contribution of actor(s) and the resources that they have access as contributors to value creation during the various stages of the service lifecycle.

More recent literature from the field of service marketing has been emphasizing the importance of context, especially with the service-as-a-process centred viewpoint. Studies show that each actor, within his or her own individual context, makes use of resources available to him or her and therefore, serves and possibly benefits other actors who share one or more of the resources in identical or similar contexts (Jack 2005). Or simply put, when different actors connect in order to gain access to shared resources, they lead to their networks getting connected (Andersson, Hertz, and Sweet 2005). Chandler and Vargo (2011) propose that the newly connected actors along with their resource exchange within the service ecosystem constitute what can be termed as context. These actors with their own existing resources occupy unique positions within the context which they further use to draw on resources from other actors, both directly and indirectly. The uniqueness of the actor's positions partly stems from their interactions with their own networks. These network exchanges or interactions may be direct in nature or indirect exchanges with networks of other actors as explained by Granovetter (1985). Chandler and Vargo (2011) suggest that viewing exchange at each level, as embedded in the context of the other levels, can be a good way of ascertaining value-in-context. For e.g. value creation can be viewed from both an actor's unique individual perspective within a dyad, and simultaneously from general perspective of service ecosystems. Both the contexts have a mutually inclusive as well as two mutually exclusive zones that can be better understood when looking at them from the different perspectives – the lone actor acting independently or the connected actor acting within the service ecosystem. This is better explained in (Figure 4).

The concept of value-in-context has been further extrapolated to value-in-social-context by Edvardsson, Tronvoll, and Gruber (2011) who propose that value has a collective and intersubjective dimension and the way that actors assess, contribute and integrate resources depends on the social context. One of the main learning from their proposed framework is that digital service customers –

organisational employees or individual users alike, are able to interact, innovate and learn using these modern-day digital services and their roles are therefore, dynamic in nature. In a separate research, Akaka, Vargo, and Lusch (2013), build on their previous works, to introduce the concept of value-in-cultural-context in order to stress upon the influence of the symbolic but very important social components of context. They argue that the complexity of context is also a function of the embed nature of social networks and the multiplicity of institutions within a service ecosystem. These socio-cultural networks affect the actions and practices of actors and therefore affect the integration of resources through various levels (micro, meso, and macro) of interaction and institutions.

It is imperative therefore, that service providers design and operate services that are receptive and responsive to changes that can possibly be induced both within and outside of the service ecosystem by these dynamically constructed and evolving actors. Building upon the research of Edvardsson, Tronvoll, and Gruber (2011) and Akaka, Vargo, and Lusch (2013), the context of these actors as change agents can be construed as socio-cultural in nature.

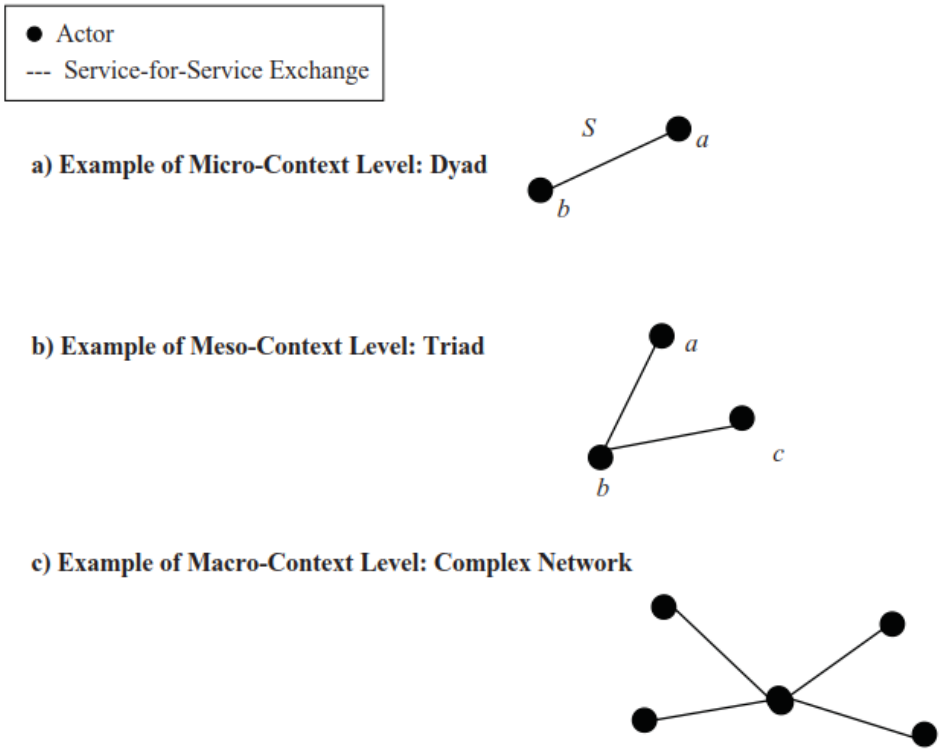

Figure 4 The different levels of context (Chandler and Vargo 2011)

4.1.2 Context in Information Systems

Context for digital service consumer is a rather unique phenomenon when observed separately from other kinds of services. There has been a constant shift in understanding of markets and the consumers for digital services and the concept

of context in information systems is an important subject that needs to be observed along with the service marketing perspective of value in social as well as cultural context as discussed in 4.1.1.

The information systems view point of designing for a user has been predominantly technology centred as explained by Endsley (2016). This in effect, has led to information systems research being primarily biased towards the viewpoint of an individual bereft of interactions, even though most information systems development methodologies are centred on developing for the user. It is imperative to mention here that a major portion of the IS literature that studies the nature of user engagement with information systems does so from a predominantly organizational individual context. Works established as benchmarks for IS acceptance and adoption such as Technology Acceptance Model (Davis 1989) and its iterations as well as the UTAUT (Venkatesh et al. 2003) have been studying information system acceptance, adoption and use from the point of view of a user with an organizational context and affiliation. This user, due to biases both obvious and not so obvious, is thought of as an individual with needs, wishes, preferences and cognitive abilities that necessitate and facilitate the use of information systems. The system is therefore developed around the user and its properties as an atomic, non-connected individual without giving serious thought to the characteristics of other users connected to this atomic entity. The bias towards individualism when imagining the information systems user is largely responsible for the loss of key inputs in the form of contexts that shape the individual user's characteristics.

It is to be mentioned here that the existence of this bias towards an atomic individual as an information systems user and the knowledge of this bias in academic literature precedes the advent of online social media and its establishment in our daily lives. Westrup (1997) observed that categorizing IS users without acknowledging the considerable work that has gone into their constitution amounts to naivety on the part of a qualitative researcher in any field, more so in information systems. Salzman (1998) has asserted the importance of context – market and organizational; and suggested incorporating a broader organizational model of technology and work structures since traditional concepts of user participation tend to be less than all encompassing. In fact, alternative information systems design methodologies such as user-centred design (Norman and Draper 1986) owe their existence to the early identification of the aforementioned bias. What has been lacking in the IS literature though, is a thoroughly constructed theory that incorporates the idea of an information system user's context so that it can be used as a defining lens to resuscitate the well-established technology centric theoretical models considered as important pillars in information systems literature.

One of the most interesting works that challenges the biased viewpoint of an atomic IS user as described above does so by modelling an unambiguous social view of the organizational information systems user as a social actor (R. Lamb and Kling 2003). The social actor model categorically differs from the atomic user concept and posits that research models based on constructing cognitive models

to explain user's rationales and subsequent actions are actually modelling an artificially constrained set of contextual factors in typically controlled experimental study settings and therefore leave the real context outside of the study, entirely. This key criticism of the atomic user model by the social actor theory is also reflective of the general criticism of cognitive social psychology (Nye and Brower 1996).

The social actor model borrows from the suggestion that social actors are at the centre of an ecosystem where they interact with various other actors who are constituted (shaped) through their context to form the basis of social institutions and identities (Goffman and others 1978). R. Lamb and Kling (2003) further extend this to assert that information systems are integral to these interactions and therefore are very much responsible for shaping the identities and institutions. The theory also builds on some important opinions from the European tradition of IS research including the fact that not only the organisational context but even inter-organisational, cultural and global contexts influence the overall context of a user of organisational information systems (Walsham and Sahay 1999; R. E. Lamb 1997). Another interesting input from the European IS research that goes into the makings of the social actor model is that the expected pattern of information system use is frequently disrupted by the typical IS user as they go through the usage lifecycle, often going around specifically built features and sometimes even reshaping technologies in order to suit their own needs and achieve organisational task based success through their use of information systems (Kumar, Van Dissel, and Bielli 1998; Kling 1987; Hirschheim, Klein, and Lyytinen 1996). This behaviour can also be attributed to the attitude towards adopting a new technology which, in turn, is influenced by cultural norms, salient other and more significantly, social contexts (Lee et al. 2003). Digital system usage, adoption and acceptance and the underlying value that users create is influenced by the actor's social ties and how these affect the commitment of the actor towards the digital service being used (Hossain and de Silva 2009).

Also, users are more likely to see themselves as members of distinct categories that are neither too personalised, nor adversely generalised so that a strong social identity and established affiliation to preferred organisational structures can be demonstrated (Brewer 1991), thus seeking for both – a sense of distinctiveness from the masses as well as one of belonging to a niche crowd. The postmodernist idea of the identity of the self is a complex, multidimensional and yet, very personalised social construction that is fluid (Howard 2000) – constantly evolving based on their contexts. The modern day social actor, always connected by the means of online social networks, is constantly producing artefacts as part of asynchronous exhibitions where in a virtual curator manages - monitors and redistributes these artefacts (Hogan 2010) and this relationship between the actor who exhibits and the curator who manages is a complex mutually beneficial relationship, where the boundaries between actor, resource and ecosystem blur over time. The assessment of value, is therefore, ever shifting as well, with value being ad-

dressed as either economic and socio-political which manifests in terms of business revenues or as value that makes sense of the self – exploration of creative pursuits and management of social relationships (Bechmann and Lomborg 2013).

The aforementioned social nature of the IS user acquires new meanings in context of the classification of information systems as hedonic and utilitarian (Van der Heijden 2004) wherein, the perceived value can entirely depend on the context of usage of an information system. Also, the recent emerging worldview of categorization of information systems users into digital natives and digital migrants (Prensky 2001) based on the era they were born in and hence their familiarization and ease of acceptance of technology and the subsequent emergence of the terms ubiquitous information systems (Vodanovich, Sundaram, and Myers 2010) presents further insights for exploring the way users interact with digital services based on their familiarization with technology in general and their perception of technology (as a forced necessity vs a part of life) in particular. The perception of technology affects how value is assessed as well, thus influencing the perception of quality.

When it comes to complex networks that are formed from individual actors, it's not just the actors who have a personal manifest of themselves that forms a so called user character – *persona* but also the complex network comprised of several actors forms its own "character sketch" - a persona that is not so personal but combination of dominant traits that are derived from the constituting actors' personas. Personal identities therefore become vague combinations of dominant traits especially for organisation digital service user, since the individual skills are identified, appropriated and represented as a collective profile of the organisation and its associated abilities (R. Lamb and Poster 2003). This can be attributed to personal identities overlapping each other within and across service ecosystems and sharing the more useful traits so as to aid value creation for the collective benefit of the service ecosystem.

Especially, when it comes to complex networks of the organisational kind, these networks are process oriented, transparent – their structures and processes are observable, supervisable and liable to be influenced (Geser 1992). These networks are differentiated by their specialisations and organisations can use them simultaneously for tasks and projects of contradicting nature, thus opening up different avenues for value creation.

The multidimensional view of the information system user as a social actor that R. Lamb and Kling (2003) theorize, consists of four important dimensions – affiliations, environments, interactions and identities. When studied and contrasted carefully, these four dimensions actually concur very aptly with the previously discussed viewpoint about micro and macro contexts (Chandler and Vargo 2011) and terms drawn from S-D Logic (Vargo and Lusch 2004; Lusch and Vargo 2014) and Service Logic (Grönroos 2011). (Table 4) draws parallels and explains how and where the two models point towards similar as well as different viewpoints.

Table 4 Parallels between Social Actor Theory (R. Lamb and Kling 2003) and Value-in-context (Chandler and Vargo 2011)

Social Actor Dimensions	Comparable terms from S-D Logic and Service Logic	Explanation from Social Actor Theory	Explanation from Value in Context and Service Logic
Affiliations	Resources	Organizational and professional relationships connect industry, national and international networks.	Resources are the operant possessions (unique as well as non-unique) of resource integrators.
Environments	Service Ecosystem	Regulated, institutionalized - practices, associations and locations.	The service provision space where the firm can facilitate value creation by engaging with the resource integrators' processes.
Interactions	Processes	Information, resources and media of exchange that organization members mobilize as they engage with members of affiliated organisations.	Distribution and interaction mechanisms for service provision without including value in themselves
Identities	Resource Integrators	Avowed presentations of the self and ascribed profiles of the organisation members as individual and collective entities.	Resource integrators use operant resources to interact and therefore, gain access to other resource integrator's operant resources.

It can be observed how slowly but surely, academic literature from both service marketing as well as information systems discusses context and associated principle value drivers – value in socio-cultural context (for service marketing) and context of use (information systems) in similar ways.

One limitation of this comparison though, is the fact that while the first is positioned as an all-encompassing theoretical framework (value in context according to SDL), the second is a focused model that has been studied and established for information systems use in primarily an organisational context. It can be argued though, that with the advent of mobile devices aided ubiquitous information systems (Vodanovich, Sundaram, and Myers 2010), organisational users use organisation specific information systems outside of the organisational environment as well, implying that the affiliations, as described by R. Lamb and Kling (2003) evolve outside of the organisational environment as well. In such a scenario, the identity as well as affiliations of the organisational user that interacts for information exchange undergoes subtle changes in contrast with the identity that he would present when working from the confines of an official environment. For e.g. using an organisational social network such as Yammer from a mobile while at home or while working virtually from a home environment is going to present different outcomes according to the social actor model. A digital service

user – actor in terms of S-D Logic lexicon (Lusch and Vargo 2014) therefore, is a complex entity with dynamically evolving affiliations - among other resources, depending on the nature of the environment to some extent and the socio-cultural context to a very large extent. To be able to predict this user's assessment of value and subsequent perception of quality while facilitating the value creation, service providers need to be able to understand what constitutes the user as an entity and how this entity evolves. User personas are once such design tool that help construct the evolution of a digital service user, visually.

4.2 User Persona

Personas are one amongst the several visualization techniques used in practice by service designers to observe and interpret. Referring to service design as a structured problem solving approach, Mager (2008) states that service designers visualize, formulate and choreograph solutions to current and futuristic problems by using generative, explorative and evaluative design approaches and hence tackle the challenge of improving (and therefore restructuring) the current services as much as designing a new kind of service innovation. This widely cited description of a service designer's job is in tune with the time-tested notion of quality that emphasizes on improving the existing experience in case of a service. In their extensive analysis of service design visualisations while using SD Logic as one of the perspectives for analysis (the other being IHIP – intangibility-heterogeneity-inseparability-perishability), Segelström and Holmlid (2011) conclude that persona method of service design is strongly in tune with the SD Logic prescribed traits of customer orientation and creating relationships for value creation. They suggest that personas be used as a means for exploring and communicating the different ways for interacting with a service as also establishing the context for the use of a service in the first place. Since the personas cannot really be judged or proven useful or otherwise, they should not be used in isolation but in conjugation with other existing design tools – the most suitable ones being scenarios.

In their critical examination of the personas method as a communication tool, Chapman and Milham (2006) contend that practitioners, user researchers and designers have varying opinions about the method ranging from strong advocacy to scepticism. This is indeed the case with very little peer reviewed discussion of the persona methodology. There are published books that advocate the use of the method (Cooper and others 1999; J Pruitt and Adlin 2006) but not much academic literature systematically evaluates the various approaches and their utility or the lack of it. The method has had different researchers advocating significantly different approaches across the spectrum. For e.g. the approach put forth by Cooper and others (1999) suggests usage of limited information about users so that the construction fits the broad-based goals of a design team. On the

other hand, John Pruitt and Grudin's (2003) approach is based on having momentous data, claiming that this approach ensures significant amounts of accuracy and hence usability.

4.2.1 Claimed Advantages of Personas

Some of the more elaborate works (Cooper and others 1999; John Pruitt and Grudin 2003; J Pruitt and Adlin 2006) that detail the personas method claim a host of advantages of using the approach as compared to the traditional user research and understanding techniques. The main advantages according to them are:

i. Memorable constructions of realistic but virtual users that enable easier engagement of design teams' members as also other stakeholders.
ii. Farther reaching design decisions that are based on the possibility to extrapolate based on existing personas.
iii. Lesser problems associated with methods which involve a more complete spectrum of user data – such as inappropriate generalisations or stagnation for lack of reliable data.

Over numerous documented and undocumented instances, personas have been used as a tool for a contextual understanding of the targeted user base of a particular service and make the design user centric. Wikberg Nilsson, Fältholm, and Abrahamsson (2010) define persona as a fictional description of a person making it easier to study and understand the characteristics of the user that a particular project is targeted at.

One of the primary arguments in favour of personas is the notion that personas or the whole idea of persona creation and persona-based design, is a reflection of the human behaviour, given the fact that humans love to create generalisations. *"We humans try to make interpretations, connections, predictions, and expectations related to other people that constitute our environment from our very formative years"* (Grudin and Pruitt 2002). This generalisation in fact, forms a very important part of the learning and knowledge assimilation process that growing humans apply. Wikberg Nilsson, Fältholm, and Abrahamsson (2010) argue that persona modelling is a qualitative method due to the reason that it deals with understanding of the social aspects of the enquired contexts as qualitative methods are also regarded as dealing with matters of knowing and understanding as explained by Richardson, Denzin, and Lincoln (2000)

Guḥjónsdóttir and Lindquist (2008) conclude from their studies of the personas method as a design tool vs communication device, that it has been more useful as a stakeholder communication tool by effective translation of the users' context for understanding of project stakeholders, so that they can relate to the future (and target) users of the service and understand why it should be tailored to behave in a certain way. But it has been less than effective as an out and out

design tool. They also believe that comprehensive user research needs to be carried out in order to ensure personas that are better representations of the end user than being preconceived ideas of the design team. As Cooper and others (1999) explain, personas and associated goals make it easier to explain and justify design ideas related to a service, and therefore it is imperative that the design phase be punctuated by presence of personas as much as possible.

Scenarios that personas are trying to enact need to be service specific and not completely out of scope. Scenarios that illustrate functionality that is not part of the service idea for the foreseeable future make the project stakeholders trust and confidence in the whole exercise of persona based design as concluded by Guḥjónsdóttir and Lindquist (2008)

4.2.2 Claimed Disadvantages of Personas

Based on their study about a number of weaknesses found in the persona method, Chapman and Milham (2006) opine that the method should not really claim to be a source of data for development or design teams.

The primary limitation is that of appropriate representation. Chapman and Milham (2006) pose the question about the number of users that personas actually represent and in case several personas are developed to represent sections of the user base, what percentage of the user base still lies between or uncovered by the personas.

Another limitation is that of dimensionality i.e. the specificity of the persona is indirectly proportional to the target user population. Chapman and Milham (2006) claim that it is impossible to distinguish the indicative characteristics of a persona from the ones that are irrelevant. Therefore, it is virtually impossible to generalize from a well-crafted (very specific) persona to a population of users that exhibits interest. This is also a stark contrast to John Pruitt and Grudin's (2003) claim of personas being a “conduit for information” as the information content itself is not quite determinable because of the limiting relationship between specificity and percentage representative target population.

They also claim the limitation of lack of proper validation methods in order to test and justify the theory. This argument is rather weak in the sense that the claim is based on assertion that personas being fictional representations, no amount of real-world data could possibly suffice to falsify or negate the advantage of their existence in a design project. This can be held true for quite a few research models proposed in different fields which are backed by qualitative methods to prove their worth as scientific and rational.

Some of the practical issues identified by Chapman and Milham (2006) such as multiple overlapping personas, creation of official and unofficial versions of the personas within the design team and subsequent political ramifications for a team environment are actually prejudiced view of a problem of plenty that surfaces in any design endeavour that feeds off innovation and multiplicity of ideas which might or might not all be relevant to the final design, but contribute to the process nonetheless.

Segelström and Holmlid (2011) claim that personas are different from other visualisation techniques due to their focus on representing idealised customers than the service itself. They assert that personas highlight the human-based nature of services and are inclusive of the idea that services are based on value co-creation between people. In their study about visualisation tools employed by service designers, they segregate the visualization tools into four different groups based on the primary objective of use of the visualisation tool by the service designer, namely – research, interpret, prototype and communicate. The first two groups are aimed at translating raw data into more accessible data while the last two are tools aimed at communicating the data. The personas methodology, according to their studies, is part of the first two groups. They further conclude that these visualisation techniques imbibe the characteristics of service logic by highlighting temporal, enactive i.e. the ongoing as well as the social aspect of the service innovation.

4.2.3 Personas as Part of a Social Setup

In a study about using personas for designing knowledge and learning services, Maier and Thalmann (2010), have identified three distinct activities that these services can be used for, namely individuation, interaction and information. While individuation refers to the evident linking of individual user to the available service content, interaction refers to the underlying processes, both formal and informal that lead to sharing and spread of ideas and knowledge – information. Information, according to Maier and Thalmann (2010) is the form where boundaries between individuals are surpassed by interactional threads by the use of use of existing and evolving user competencies in order to create improved business processes. This idea fits perfectly to the assertion of Chandler and Vargo (2011) who propose context is an important dimension of value creation because it frames exchange, service, and the potentiality of resources from the unique perspective of each actor, and from the unique omniscient perspective of the entire service ecosystem. Going back to the previous suggestion about using personas not in isolation but in conjugation with other design tools (Segelström and Holmlid 2011), it is imperative to understand that the suggested co-design tool for personas (scenarios) in fact, helps root a persona in its context. When a user persona's (expected) behaviour during specific instances in a service experience lifecycle is mapped to specific user scenarios, it effectively provides clues related to the context of use as well as integration of resources carried out by the user (actor) persona in conjugation with other actors in the service ecosystem. The next logical step in this direction would be to explore the different kinds of resources that a digital service user possesses or is at least, capable of developing.

4.3 Digital Competence

S-D Logic (Vargo and Lusch 2004; 2008a; Lusch and Vargo 2014) lays a strong focus on users as resources integrators wherein they integrate both operand and operant resources from their network and environment using their own resources. The general description of user's own operant resources has been based on knowledge and skills. These resources make an individual user more likely to succeed when competing against another individual user - in other words, makes one more competent than the other. Competencies have been generally described as a combination of hierarchically organised set of resources – knowledge, skills and attitudes (Cheetham and Chivers 2005). A better correlation between competence and skill has been established in OECD project wherein competency is said to involve the ability to meet complex demands while being able to demonstrate the ability to employ several kinds of psycho-social resources, in specific contexts of use – skills and attitudes being a few examples of these resources (DeSeCo 2005 via Ilomäki et al. 2011).

The European Parliament and the Council has recognised digital competence as one of the Eight Key Competencies for lifelong learning and defined it as *the confident and critical use of Information Society Technology for work, leisure and communication* (European Council, 2007 via Janssen et al. 2013). The broad-based definition makes it evident that digital competencies are more than just a measure of technical know-how and skills - they encapsulate user confidence and critical attitude as well. Studies on digital competence have also sought to differentiate digital competence from digital preference as the two being results of different cognitive constructs that do not correlate (Kirton, 2003), suggesting that early adopter don't necessarily demonstrate higher proficiency as compared to later adopters. However, the willingness to adopt early and experiment is an important attitude that builds the basis of other competencies when it comes to digital service users. In their study on what exactly constitutes digital competencies, Janssen et al. (2013) identify twelve highly complementary areas of digital competence and conclude that possessing elementary skills is the basic level of competence that goes on to the next level when users are able to apply the basic level skills to more advanced areas. Especially for digital services, which are dictated by underlying information systems and their interactions with information communication technologies – which develop and evolve rapidly, digital competence requires both the ability to learn with (using) and about digital technologies that allows the user to use them in the best possible way to create value while doing so with utmost confidence. Therefore, digital competencies are indeed seen as a combination of skills, knowledge and attitudes connected to different objectives (on a scale of hedonic pleasure and utilitarian value (Van der Heijden 2004)) over different domains (personal life or professional life) and at different proficiency levels (beginner to very expert).

Janssen et al. (2013) conclude that ideally, a digitally competent user, is proficient to a level where he demonstrates self-efficacy coupled with the ability to

seamlessly use digitally enabled services. Digital competence, therefore, is an umbrella term that covers a number of resources that enable the competent user of a digital service to independently identify objectives and set goals while being aware of his own level of proficiency as well as the surrounding digital environment and context. This allows the user to take confident, appropriate decisions that not only further his own self-development but also enhances the environment for the other users of digital services around him. This conclusion is consistent with S-D Logic viewpoint of network actors being essential participants of the value creation process.

Table 5 Constituents of digital competencies (Janssen et al. 2013)

Digital Competence Area	**Description**
A. General knowledge and functional skills	*The digitally competent person knows the basics (terminology, navigation, functionality) of digital devices and can use them for elementary purposes.*
B. Use in everyday life	*The digitally competent person is able to integrate technologies into the activities of everyday life.*
C. Specialized and advanced competence for work and creative expression	*The digitally competent person is able to use ICT to express his/her creativity and to improve his/her professional performance.*
D. Technology mediated communication and collaboration	*The digitally competent person is able to connect, share, communicate, and collaborate with others effectively in digital environments.*
E. Information processing and management	*The digitally competent person uses technology to improve his/her ability to gather, organise, analyse and judge the relevance and purpose of digital information.*
F. Privacy and security	*The digitally competent person has the capacity to protect personal data and take appropriate security measures.*

G. Legal and ethical aspects	*The digitally competent person behaves appropriately and in a socially responsible way in digital environments, demonstrating awareness and knowledge of legal and ethical aspects on the use of ICT and digital content.*
H. Balanced attitude towards technology	*The digitally competent person demonstrates an informed, open-minded, and balanced attitude towards Information Society and the use of digital technology. The digitally competent person is curious, aware of opportunities and new developments, and is comfortable to explore and exploit them.*
I. Understanding and awareness of role of ICT in society	*The digitally competent person understands the broader context of use and development of information and communication technology.*
J. Learning about and with digital technologies	*The digitally competent person actively and constantly explores emerging technologies, integrates them in his/her environment and uses them for lifelong learning.*
K. Informed decisions on appropriate digital technologies	*The digitally competent person is aware of most relevant or common technologies and is able to decide upon the most appropriate technology according to the purpose or need at hand.*
L. Seamless use demonstrating self-efficacy	*The digitally competent person confidently and creatively applies digital technologies to increase personal and professional effectiveness and efficiency.*

5 THEORETICAL FRAMEWORK

Building on the learnings from the previous chapters in this report, it can be interpreted that a socio-culturally connected digital service user's creation and assessment of value during the service experience lifecycle is broadly driven by the user's objectives, socio-cultural contexts and digital competencies that all combine as operant resources within overlapping digital service ecosystems.

As part of the building blocks to the framework being proposed, the revised premises from SD Logic as put forth by Service Logic (Grönroos 2011a) have been used as conceptual ladders to define the concepts of usage environment, socio-cultural context of use, resource and resource integrators. The proposed framework makes use of the previously identified foundational premises of S-D Logic that are relevant to the concept of value creation and assessment for digital services. These are FPs: 1, 3, 4, 6, 7, 9, 10. The proposed framework is a two-stage approach where stage one seeks to understand value creation and stage two makes sense of the evolution of the user's persona during the service experience lifecycle.

5.1 Stage I: Value Creation and Assessment in Socio-Cultural Context

The primary service consumer is envisaged at the centre of a service consumption environment which is basically the consumer's value creation space, as explained by Grönroos (2011). This and other such consumption environments, belonging to each individual primary service consumer are part of the larger digital service ecosystem. Each environment consists of the service delivery and recovery processes which are the targeted distribution mechanisms for service provision (Grönroos 2011), while remembering that no value is embedded in the processes as such.

Three kinds of resource integrators make up the service ecosystem:

A. The primary service consumer from whose viewpoint the perceived quality is being envisaged.
B. The service provider who offers service and has the opportunity to co-create value jointly with the service consumer by being part of his usage environment.
C. Network actors that interact with the individual service consumer using direct or indirect interactions in order to influence the value creation activities and therefore the perception of quality.

The direct interaction between the service provider and the service consumer occurring as part of the service experience is part of a dyad based, micro context (Chandler and Vargo, 2011) on which current theories of perceived service quality are primarily based, thus treating the primary service consumer as an atomic entity bereft of inputs from a network of affiliations.

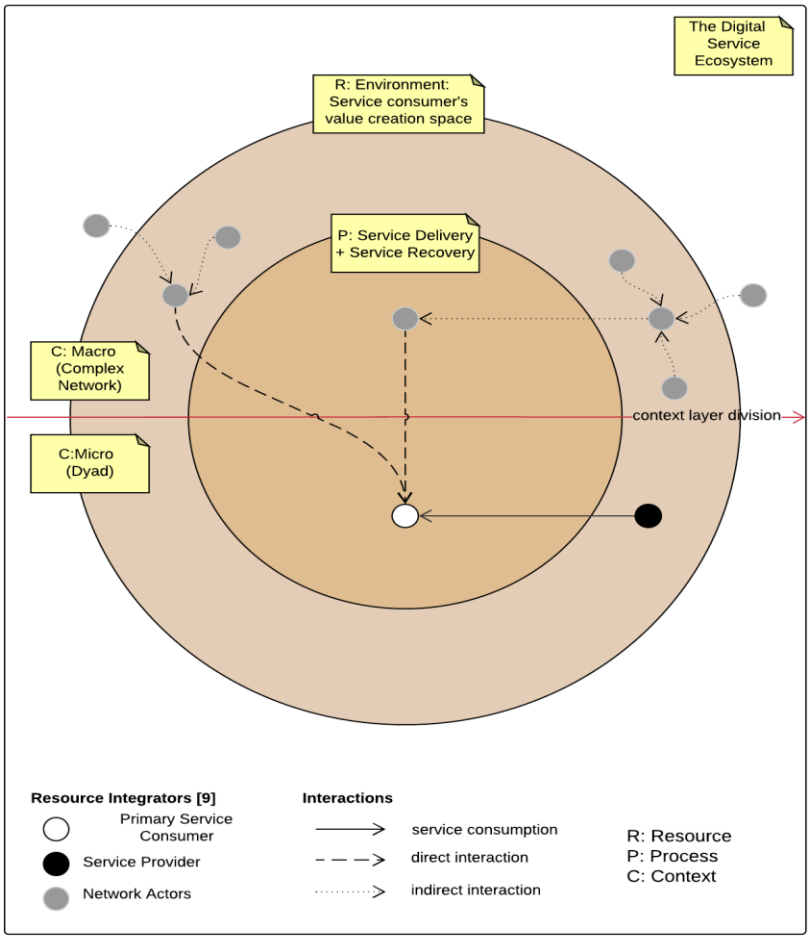

Figure 5 Value in micro-context in a digital service ecosystem

In (Figure 5), the outer circle which is the primary service consumers' value creation space as introduced by Grönroos (2011) is embedded in the overall service ecosystem which contains several such value creation spaces belonging to the digital service users. The value creation space or overall service environment is therefore the user's personal resource (as described by S-D Logic FPs 3,6 and 7). The service provider interacts with the digital service user in order to provision a service inside the user's value creation space, thus acting as a facilitator (FPs 7a and 7b). The provisioned service is a combination of one or more processes including service delivery and service recovery thus incorporating two of the phases as proposed by Nasr, Eshghi, and Ganguli (2012), in their consumer value-chain based framework for service quality. The lower half of the figure depicts the dyad based direct interaction between the provider and the primary service consumer (solid line), embedded in a micro context (Chandler and Vargo, 2011). To widen the scope of context of the user, the upper layer of the context needs to be considered as well, which unearths the indirect linkages between the primary service consumer and network actors which are a direct consequence of the various affiliations of the primary consumer. These network actors, who are primary consumers in their own environments are further linked to other network actor which are, in turn, a consequence of their affiliations.

By changing the context of value to a complex network-based macro context (revised by Chandler and Vargo, (2011) as value in context), we discover that service consumer is not just an atomic entity but a social actor (Lamb and Kling, 2003) with varying affiliations based on the kind of interactions that he has within the context of the usage environment. Building on the work of Yang et al. (2005), the network actors that the primary service consumer interacts with, as part of his complex network can be further categorized as follows:

a) Users of the same (identical) digital service that interact directly with the service consumer
b) Users of the same (identical) digital service that interact indirectly with the service consumer
c) Users of a similar services that interact directly with the service consumer
d) Users of a similar service that interact indirectly with the service consumer by interacting with one or more of his direct interactions.

These four actors are important resource integrators who use their own operant resources in creating value while simultaneously assessing their experience of the service. The network actors within the macro context interact with the service consumer as part of a professional (the word professional is used instead of organizational as it is more inclusive of single person organizations such as free lancers who are not quite part of an organization but still have professional interactions) or personal affiliations, as described by Lamb and Kling, (2003). The scale on which value desired and derived from a digital service is assessed can vary between hedonic and utilitarian (Van der Heijden 2004) based on the kind

of affiliate network the service consumer interacts. The network actors, who provide operant resources for the primary service consumer to interact with are simultaneously forming their own contextual ideas and assessing the possible value that they can create as primary consumers from the same or a similar digital service. This, in turn, drives how quality is perceived by the different service consumer in a relational context. The working model of value creation and assessment in a micro context, as described in (Figure 5), therefore evolves to the one in (Figure 6) for a wider, network context.

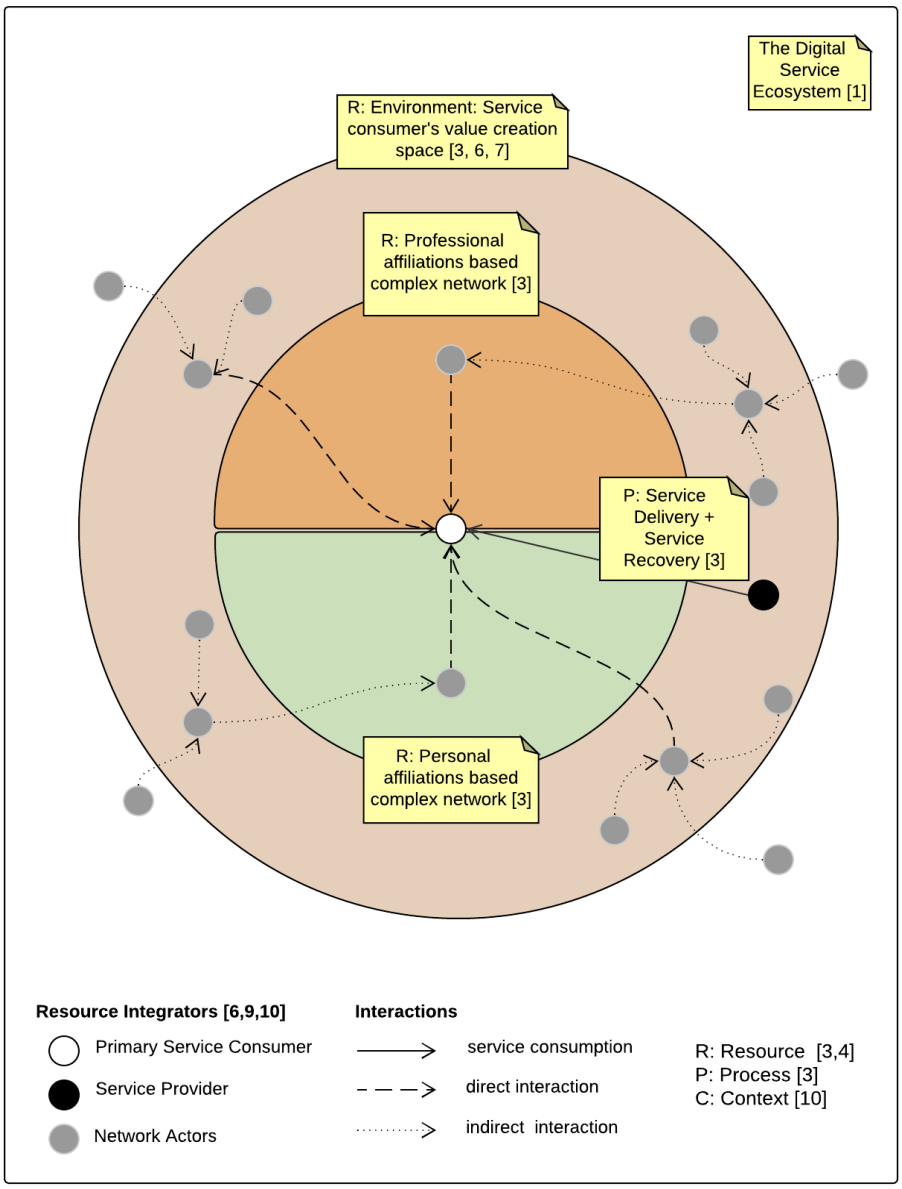

Figure 6 Value in network context in a digital service ecosystem

This evolved model of value creation and assessment widens the context of available operant resources to the primary service consumer, by factoring in two

different kinds of network affiliations that the primary consumer may be influenced by and influence back in turn – personal and professional. It is pertinent to remember that owing to ubiquitous nature of modern-day digital services (Vodanovich, Sundaram, and Myers 2010) the nature of environments can no longer be differentiated in black and white. This also gets emboldened by a constant shifting of usage pattern between digital services as well.

To explain this in terms of a relevant example, let us imagine a digital service user who is a part time employee in a role where he regularly uses devices provided for, by the employer – a mobile phone and a laptop. These devices come pre-installed with some essential digital tools that are deemed important for the job role. However, given the fact that the employer owns the devices, features and updates available as part of the tools are controlled by the employer's central policies. This implies, among other thigs, that the user may not have access to the latest feature or potentially problem causing modules of tools which are considered non-essential for work but considered liable to failure without enough testing within the organizational user networks. The user is supposed to undergo essential trainings for learning the usage of these tools, interact with users both inside and outside of his team who are older users of his tools as well as learn to use new features as and when these are made available. The organizational environment, however, encourages the user to focus on features and modules that are essential to the job while training and enhancing his skills and abilities about the same. Now let us imagine that the same individual is also a part time student in a program that will ultimately enhance his current career. As a student, the user has access to more devices and tools some of which are the same as the ones he uses in an organizational context – for example web-browsers, office productivity suites etc. In this non-professional context both the user's network (a personal network consisting of academic peers, friends and other students) and environment less controlled devices and tools with updates and features available to try and use immediately on release) provide slightly different operant and operand resources. The user obviously has different objectives in both contexts and uses different skills and competencies in order to achieve these objectives. While doing so, he still develops the different skill sets and competencies in different ways, owing to the fact that primarily, he is using digital services that are identical or similar in nature. And there in, lies the importance of factoring in the context of network affiliations. Based on the kind of network users that a primary consumer interacts with, he uses and enhances differing skills and competencies but the usage of these in new usage contexts is never in isolation. Skills developed owing to personal networks are usable in a professional context of use and vice versa. To summarise the example, the identity of self that a user cultivates consciously as well as unconsciously as also the persona of the user that network actors and service providers form over time, are always shifting between the usage context, environments and objectives.

The user, however, is always learning with regards to these factors by factoring how to identify resources, how to use these resources and improving his skills and competencies for using the resources more efficiently during a future

iteration of the service usage during the digital service experience lifecycle. This evolving user thus becomes a future resource for the other users who start off by learning as beginners and evolve over time in the same way.

5.2 Stage II: Evolution of the User Persona During the Service Experience Lifecycle

In order to build up an understanding of the shifting nature of the user of a digital service, we go back to using personas but in aslightly different way than the one prescribed by academic research related to personas as a design tool. So far, we have established that personas have been used as static representations of varied user basis that help us understand the aspects of the enquired contexts (Wikberg Nilsson, Fältholm, and Abrahamsson 2010). But the use of personas in service design has been done for mapping of groups of users to static representations. For the purpose of this research, we explore the use of persona to identify and map an individual user to the shifting and evolving frame of competencies and contexts. In effect, this means that the personas stay static from the point of view of the observer – the service provider in this case, but the user evolves by graduating to different personas over the service experience lifecycle. This viewpoint can be visualised as what can be described as a "shadow persona scale", with the word scale signifying a positive growth of user's competencies as he evolves to higher level personas. As the user evolves, his value creation sphere (Grönroos 2011a) evolves (and grows) as well along with the sphere of influence that he commands over network users. It is proposed that the user starts of as The Initiate, moving on to The Intermediate persona before becoming Proficient and finally an Expert. The foundation and detailed specifications of these personas in rooted in the user's own digital competencies – an essential resource for a digital service user (Vargo and Lusch 2004; Lusch and Vargo 2014; Grönroos 2006). The digital competencies considered for this framework are made up of knowledge, skills and attitudes (Janssen et al. 2013) – operant resources primarily used while dealing with information systems - the basis of digitally provisioned services. The proficiency of the user with respect to the resources is graded on the basis of actions that a user is likely to perform in specific scenarios when using digital services. (Table 6) describes how these specific actions map to competencies.

Table 6 Digital competencies defined in terms of action specific resources.

Resource	Actions	Explanation
Knowledge	Define	Ability to understand and define the problem at hand
	Identify	Ability to identify available resources
	Access	Ability to define and request access to resources
Skills	Evaluate	Ability to evaluate outcomes of actions and experiences
	Manage	Ability to manage tasks and subtasks
	Integrate	Ability to inculcate greater knowledge from a service experience
Attitude	Create	Ability to create new knowledge as part of a service experience
	Communicate	Ability and reasons for communicating
	Adopt	Ability and eagerness to inculcate newer approaches.

It is important to note here that the persona lifecycle, rooted in user's own digital competencies is observed with respect to a specific digital service's lifecycle. That does not however imply that a new user of this service always starts as The Beginner. Based on previous usage experience with similar services or in similar contexts, a new user of the service may still start as The Intermediate or The Proficient. The proficiency of the persona however, does not depend on factors such as age or seniority in an organization etc. Also, time is not a factor of how fast a user progresses along the shadow persona scale. The progress is unique to individual users and dependent on how well they are able to use their operant resources, within their socio-cultural contexts. In addition, it is important to note that not all users are equally likely to progress through all personas. The likeliness of a user achieving the ultimate persona of The Expert is a function of the user's individual objectives as well as environment's (organizational or personal) collective objectives. An engineer in a design organization who primarily works with SaaS based CAD service may progress to becoming a proficient with one tool due to various reasons whereas another engineer in the same organization might instead achieve only intermediate level with this tool while going on to achieve expert level with a different tool or several different tools because of different objectives.

And it is here that the service provider has an opportunity to identify potential proficient service consumers, interact with them, influence their objectives (and associated actions) and therefore help them build and improve digital competencies in a way that an Initiate progress to The Intermediate, The Proficient and in the rarest of cases The Expert.

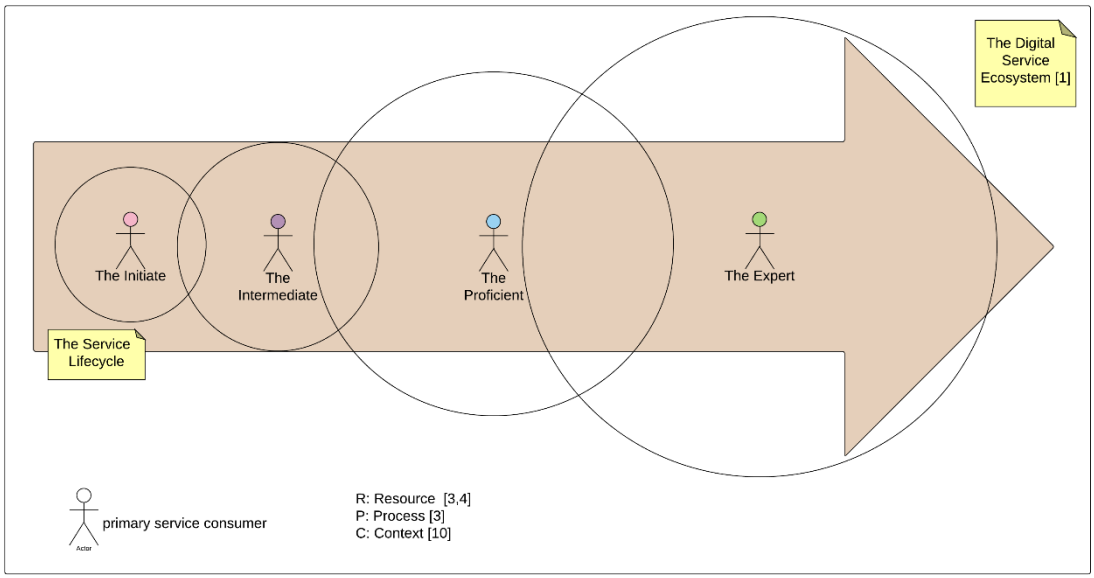

Figure 7 Evolution of user personas on the "shadow persona scale" over several iterations of usage during the service experience lifecycle.

As can be observed from (Figure 7), the value creation sphere, from within which the service consumer identifies resources for integration as well as within the boundaries of which they exercise influence, is much smaller for lower proficiency personas as compared to higher proficiency personas. The higher proficiency users enter the ranks of key users and influencers that can be optimally managed by service providers as well as intermediary organisations as operant resources for other, less proficient users.

Based on the definitions of specific actions for determining levels of digital competency as described in (Table 6), (Figure 8) describes specific actions and usage clues that help determine the current proficiency level of a user persona. (Figure 8) therefore acts as a guide for mapping users to the "shadow persona scale" on which one or more current digital service user(s) may be mapped. It can be observed that The Initiate is less independent in identifying relevant resources, integrating them and is likely to create less collective knowledge i.e. operand resources for other users. The likeliness of a user progressing to the next level persona will depend primarily on his own environment which helps shape objectives in the socio-cultural context. The service provider however, has the opportunity to interact with users in their (users') own spheres and help them while influencing their choices, their motivations and therefore shaping their personal objectives.

(Figure 9) describes how the proposed theoretical framework is arrived at by understanding the broad-based value creation and assessment drivers of an individual digital service user as an actor with varying objectives, socio-cultural contexts and digital competencies within the service ecosystem. The second stage of this framework visualises the user as a persona on the shadow persona scale

by identifying usage clues and specific actions of the user during the service experience lifecycle.

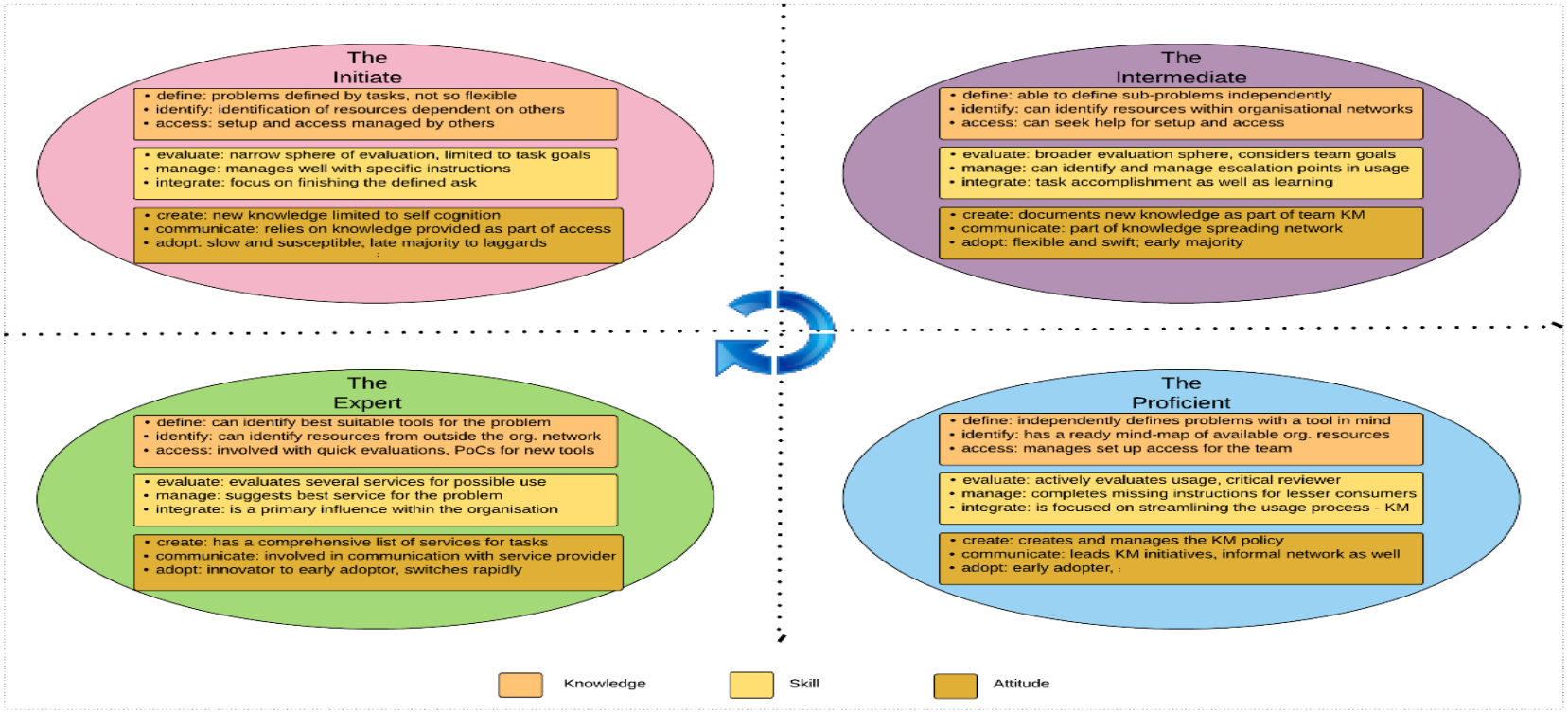

Figure 8 Usage clues and specific actions for tracking evolution of digital competencies with the evolution of persona. The evolution is tracked over several iterations of use during the service experience lifecycle.

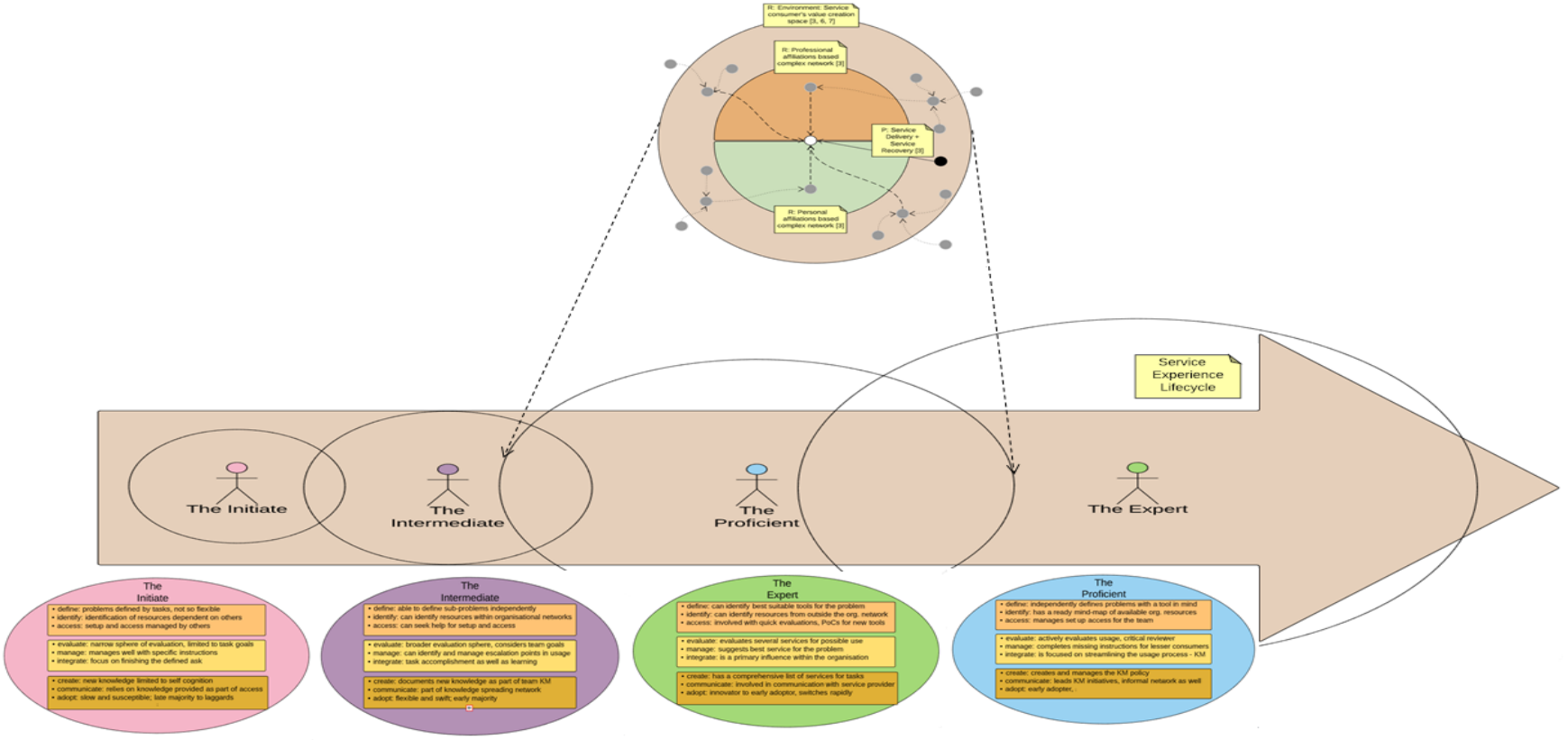

Figure 9 Top-Down Build Up of the Proposed Theoretical Framework

6 RESEARCH METHOD

6.1 Methodology

The proposed theoretical framework for using co-creation as aid to understanding perceived service quality is rooted in the user's socio-cultural context. The users being studied in our model case – the international degree students at the Faculty of IT, JYU are part of an academic environment with socio-cultural implications. Therefore, qualitative research is chosen as the apt research method for this study. In order to study topics while considering the social, cultural or political aspects of people as well as organisations that they are part of, Myers (2013) suggests using qualitative research as a reasonable approach to interpret and understand social phenomenon. The theoretical framework introduced in the previous chapter needs to be studied in a real-life scenario in order to ascertain its reliability and general validity, using empirical data. It has been sufficiently established that the topic of research – pertaining to using value as an aid for understanding perceived service quality of digital services, is rather unexplored in academic literature, therefore the chosen method of research i.e. qualitative is especially suited for an exploratory study as part of this research.

This study further uses the interpretive research epistemology, wherein, it is assumed that the reality being sought is accessible by observation of social constructions – language and events in shared contexts. The phenomenon being studied or established, is therefore, sought to be studied by uncovering the relational contexts and meanings that the people involved with them, assign to them (Myers 2013). In addition, since the proposed research framework already considers the reality as a subjective, relational construct applicable to the user's existing knowledge and cognition, interpretivism as the epistemological approach is found to be the most suited one (Eriksson and Kovalainen 2015).

There are three possible strategical pathways for conducting interpretivist qualitative research – deductive, inductive and abductive. While deductive approach is suitable in cases where existing theories are being tested as being suitable to a specific case (Hyde 2000; Ormston et al. 2014), inductive approach is the opposite where in, a specific case is used to build up a new general, all-encompassing theory. The third approach, that is abductive, is suggested to be used when a new phenomenon is being understood while also suggesting a new theory in a back and forth process of going between theory and empirical data (Dubois and Gadde 2002). In the case of this study, the construct being *re*-understood – Perceived Service Quality is a specific case of quality determining phenomenon that has been studied in academic literature for considerable time using different theoretical frameworks. In this study, we try to ascertain if the concept of value as explained by the theoretical principles of SD Logic and its revisions are suitable for understanding the phenomenon of Perceived Service Quality in digital services. Therefore, inductive approach suits the purpose of this study and is used as such.

The interpretive research is carried out by the means of a case study for empirical data interpretation, wherein, an attempt is made to understand a phenomenon using the contextual meanings assigned by users of the model case organisation (IMDP students at the JYU Faculty of IT) to events and organisational structures. This approach suits the research case well because, as Myers (2013) opines, a defining feature of case study research is the researcher's focus on asking how and why questions to understand the phenomenon. This helps form relationships between relevant factors and issues discovered during the exploratory phase of the research and their relevance in other similar situations. The above explanation suits the current research and model case perfectly where, an attempt is made to understand, using inductive interpretation of empirical data, whether value creation and assessment as explained by S-D Logic and its revisions can be used for understanding the phenomenon of perceived service quality in a new light.

6.2 Data Collection

The approach used for collecting data for this case study is primarily that of interviewing the end-users from the model case organisation i.e. the international students from the JYU Faculty of IT. The researcher himself being an international degree student at the Faculty of IT, direct observation of subjects and practices in the case organisation was the secondary (passive) data collection approach. The secondary approach is not so much a conscious approach as an ongoing observation and first-hand experience of the complete digital service ecosystem during the researcher's time as an active student here at the JYU Faculty of IT.

As already explained, the faculty's international master's degree programmes have students of a foreign origin as well as Finnish origin who pursue

the relevant degree courses using English as a primary medium of instruction and examination. The exact breakup of the interviewees along with the nature of their studies and the time spent by them studying at the JYU Faculty of IT, along with other relevant roles is described in (Table 7). As a relevant background to this research, it is pertinent to explain the structure of international degree programmes at the faculty, at the time of conducting these interviews. Before 2013, the faculty had one international degree programme named Mobile Technologies and Business (MoTeBu) where in the students were free to focus on electives related to web services development or information systems science as they progressed with their studies. Starting with academic year 2013, the university phased out studies in the MoTeBu programme and introduced two new programmes – Service Innovation and Management (SIM) majoring in Information Systems Science and Web Intelligence and Service Engineering (WISE) majoring in Computer Sciences.

Table 7 Distribution of interview candidates across attributes

	Interviewee Attribute	**Number of Interviewees Conforming to the attribute**
Study Programme	MoTeBu	3
	SIM	4
	WISE	7
Where previous degree was pursued	In Finland	3
	Outside Finland	11
Number of Years Studied	Less than 2	4
	Between 2 and 5	6
	Graduated	4

17 students were interviewed for the purpose of collecting empirical data using semi-structured interviews, for this study. Of these 10 interviews were done face to face while 7 were conducted over a Skype video call. Each interview lasted for 30 minutes on an average with the longest taking 50 minutes and the shortest taking 25 minutes. The interview was conducted with the aid of a guide questionnaire in order to keep the questions and topics of discussions around the

suggested topic of discussion. The difference in interview timings can be attributed to the open-ended nature of questions asked as well as the nature of engagement with the topic, of the interviewee. All the interviews were recorded using a mobile device or Skype call recording plugin, with the prior permission of the interviewees. The interviewer also made short notes of the context of questions and replies during the interview for use during transcription and analysis. Three of the interviewees turned out to be non-active degree students without substantial inputs and hence their interview data was not used for the purpose of this research. The recorded interviews were duly transcribed to textual form for further research analysis. Since the transcription of interviews to textual form was done by the researcher himself, his own notes and observations from memory were added to the transcriptions as and where possible.

As explained before, the secondary data source – observation of the existing organisational framework, practices and tools was carried out prior to start of this research in an unconscious manner and forms, in parts, the researcher's bias. Nonetheless, this was helpful in selection of JYU Faculty of IT as the model case as well as formation of a structural outline for the interviews.

6.3 Data Analysis Approach

For the purpose of analysing data from the interviews, coding was used as an interpretive technique for organising and thereby interpreting the data collected. As concluded by Myers (2013), the identification of underlying themes from the large amounts of textual data helps to reduce outliers and focus on keywords relevant to the research. The interview data was initially classified in main categories with the help of codes such as "Resource", "Process", "Context", "Resource Integrator" and "Interaction". The specific actions from these main labels were then classified using sub-codes like "Knowledge", "Attitude" and "Skill" which were mapped to specific defining actions on the basis of the analysis of the detailed responses. This helped unearth underlying themes and interlinkages between the proposed concepts.

7 EMPIRICAL RESEARCH

7.1 Digital Services at the University of Jyväskylä, Faculty of IT: Analysis of Observatory Evidence

Based on the discussion in the preceding sections, it can be construed that SD Logic, its revisions and associated concepts from Information Systems can be innovatively combined in order to understand perceived service quality as a phenomenon where the value is primarily created and assessed by the user of a digital service and the onus of facilitating value creation and improving the quality lies with the service provider.

To study the phenomenon of perceived service quality from the perspective of a value creation for this research, the Faculty of information Technology at the University of Jyväskylä is studied as the model case, specifically from the viewpoint of international students as primary actors or users of the digital service(s). The IT Service ecosystem at the University of Jyväskylä is a network of people, processes and enabling tools that caters to all the faculties including the students and the staff – both administrative and academic. It is important therefore, to present a broad-based overview of the ecosystem and narrow down the scope of the current study. While the complete digital service ecosystem has various user groups and underlying processes, the scope of this study is limited to testing our framework in the specific context of international students at the Faculty of IT – understanding the users as service ecosystem actors, their socio-cultural contexts and how they create and perceive value, how the service provider (the JYU) interacts and helps create this value and finally how the overall perception of quality is formed and evolves over time.

7.1.1 The Digital Service Ecosystem at JYU

The digital service ecosystem at JYU (Figure 10) is a complex mix of various services that are wholly or partially provisioned using digital channels via intermediary actors or as a complete self-service. These include the University of Jyväskylä website, academic management and scheduling system (Korppi) learning environments (Moodle, Optima, Koppa), communication tools provisioned by the university including email and instant messaging tools (Office 365 as well as Google Apps), the official social media pages managed by the university across platforms such as Facebook, Instagram etc. as well as other auxiliary digital services made available to students as part of the university infrastructure – IT labs, library search and scheduling, printing facilities, health and wellness services, university owned or supported residential facilities and services specific to International students such as the JYU student ambassador programme and other services offered by the JYU international office. Not all these services are primarily digital in nature, but they all have one or more digital interface where in the users can access them using self-help or intermediated digital channels like live chats, emails communications, self-organised booking calendars or even social media feeds. All the support and development for "officially" supported applications and tools is managed by the IT department with via its service auxiliaries such as the IT Help Desk available both as physical point of contact as well as through digital channels during prescribed contact hours.

7.1.2 Actors and Contexts

The University of Jyväskylä has students from diverse undergraduate study programmes and therefore different objectives. The local Finnish students coming in through the schooling system pursue academic degrees that culminate in master's degrees. At any time during the semester the university also has the presence of several students not native to the JYU who are part of exchange programs being organised either as part of Erasmus student exchange or collaboration between their home university and the JYU. These students study courses at JYU for one or more semesters before returning to their home universities to continue with their regular degree programmes. The third group is that of students primarily arriving from different places across the world to pursue master's degree programmes where the language of instruction is English – commonly referred to as International Master's degree programmes (IMDP). It is pertinent to mention here that the intake for the IMDPs is not limited to foreign nationals only and Finnish citizens by birth as well as those with acquired Finnish citizenships and holders of a Finnish residence permit are eligible to apply for and pursue these programmes if they are willing to study using English as the primary medium of instruction.

The users (international degree students specifically in our model case) become familiar with these digital services and come to use them in everyday life in many ways. The first official introduction to these services is (intended to be)

the orientation week that the university conducts for all the newly admitted international students during the first week of the fall semester in in the month of September. The orientation programmes are run both at the university level for familiarising with common processes, practices and tools available university wide as well as the faculty level for familiarising with faculty specific way of doing things, upcoming schedules, programmes, events as well as study guidance and counselling.

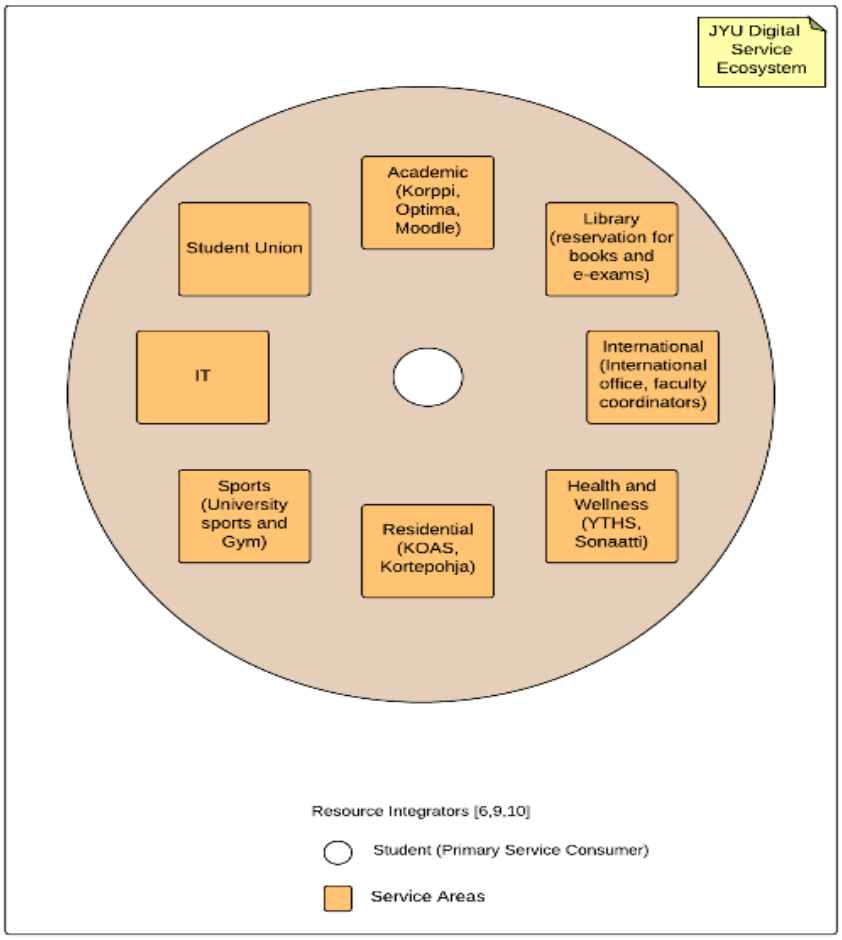

Figure 10 Overview of the Digital Service Ecosystem at the University of Jyväskylä

During this same time, students are also introduced to a "tutor" who is an experienced student, already part of the academic system and chosen for his or her soft skills, so that the tutor is able to familiarise the new students with all aspects of student life in JYU – ranging from academics, administration to residential and co-cultural. The tutor can be a student of a non-international degree program as well – the main criteria for choosing a tutor is the fact that he or she is well versed with the university system and good at communicating salient aspects of the same to the new students. The new students "shadow" the tutor during the first week or two where the tutor shows them around the campus and

gives an overview of how things work around the JYU campus. During this same time, the tutor gets the new students acclimatised to the IT ecosystem and services made available by the JYU. This starts right from the point of getting them registered in the university IT system and making their unique credentials available to them and goes through various phases, wherein, the tutor gives hands on usage demonstrations to the students (individually or in groups) of the different available services described before. This session is also intended to make the students aware of the context of usage of different applications and services, as and when required.

Resource integrating actors are the primary components of a digital service ecosystem (Akaka and Vargo 2014; Lusch and Vargo 2014). These actors act upon operand resources in the form of both other, dormant network actors as well as the ones made available by the service provider. For the specific case of our study, the international degree students studying English language master's degree programs are the resource integrating actors at the centre of the JYU IT service ecosystem. These actors can be plotted to the "shadow persona scale" (Figure 7) using the usage and action clues from (Figure 8).

In our case study, an individual international degree student is at the centre of the JYU Digital service ecosystem primarily provisioned by JYU, acting as a (intermediary at times) service provider. The degree student, as a digital service user, is at the centre of his own value creation environment rooted in the context of socio-cultural use. As part of this environment, the international degree student has professional interactions with fellow academic students, academic staff, administrative staff as well as other peers at the university. The previously described tutor - international student relationship can also be categorised as a primarily academic network related interaction since the tutors are assigned to the student by the university administration. On the other hand, the degree student, as part of non-academic activities both outside and on the JYU campus, has a network based on personal interactions as well (Figure 11). These maybe students at JYU that he comes to interact with owing to membership of hobby clubs, student associations etc. In many cases, these may also be students of academic institutions other than the JYU which share common, non-academic student bodies and clubs with the JYU. Therefore, even while being an isolated user of one or more digital services offered by the JYU, the international degree student's socio-cultural context assumes complex layers (Chandler and Vargo 2011; Akaka, Vargo, and Lusch 2013).

7.1.3 Digital Competencies of the IMDP students

The international degree students who have a normal prescribed study period of two years, consisting of four academic semesters and two summer holiday periods, have personal and institutional objectives that are different from Finnish degree students who are part of five-year degree programs. However, a prerequisite for being an international master's degree student at the JYU is that the stu-

dent should have completed a bachelor's degree with requisite number of academic credits in a recognised academic institution. This implies that all students accepted to the IMDP are familiar with a university environment and have been users of digital services provisioned by academic universities elsewhere – especially tools such as learning environments, scheduling systems and IT based services. This in turn, implies that most (or all) international degree students are not absolute beginners in terms of usage of academic digital services and are slightly ahead of the beginner's stage according to evolving proficiencies of personas during the service

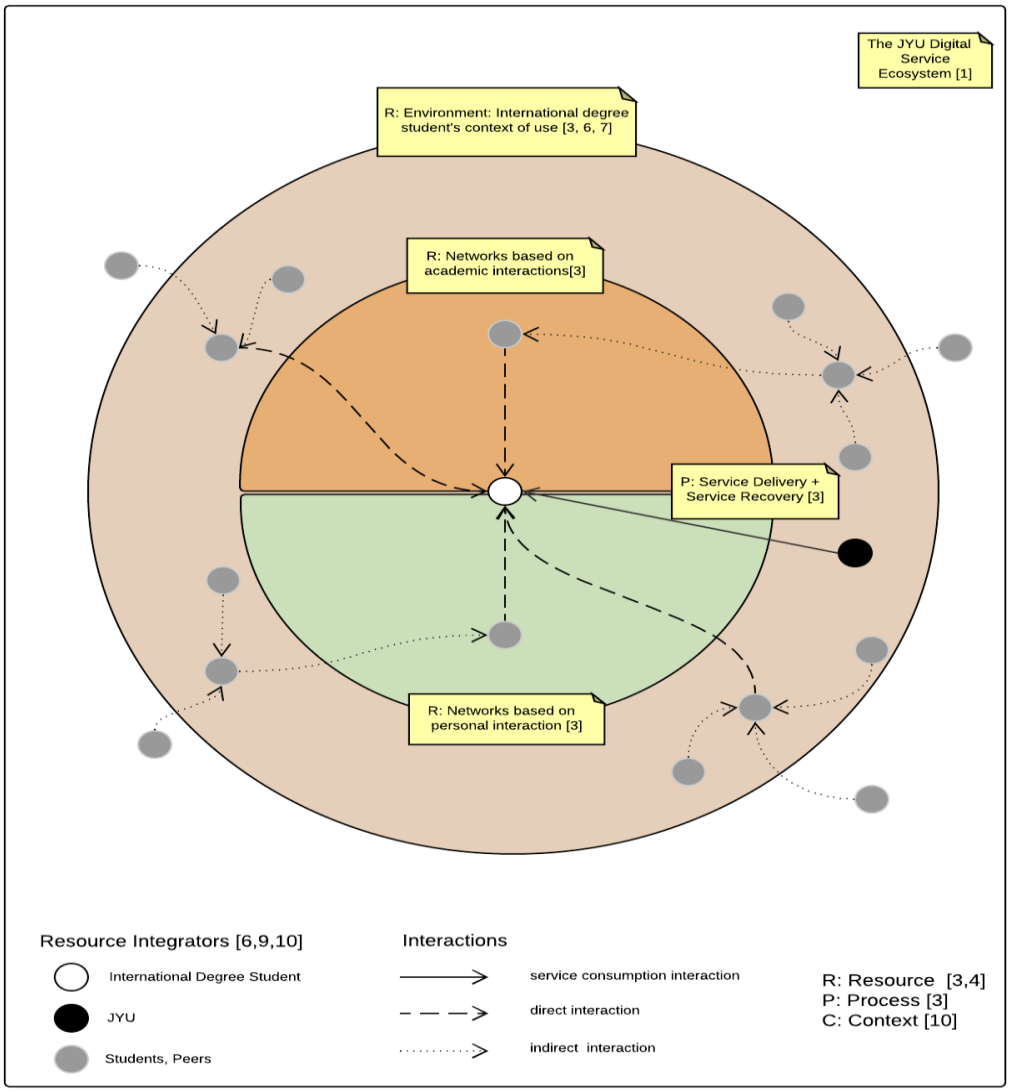

Figure 11 JYU Ecosystem actor mapped to the value creation in network context model

lifecycle. The digital competencies, which have been established to be a function of the individual's knowledge, skills and attitudes previously, can still vary, notwithstanding the proficiency of their shadow persona on the scale. As established

already, in section 3.1.5, service ecosystems seek to improve their processes and therefore viability by making it easier for actors to identify and integrate resources. Thus, other ecosystems (in our model case academic institutions other than the JYU where the international students acquired their bachelor qualifications) are assumed to not have identical processes in place as the JYU ecosystem. This was evident from interviews conducted with students that were newly admitted to the Faculty of IT's IMDPs and yet to start their studies. The replies reflected the nature of IT service ecosystem in their home countries as well as the cultural undertones that service provision activities involve.

7.2 Analysis of Empirical Data

7.2.1 Value Creation and Assessment Drivers

In accordance with Stage I of the proposed framework, all international master's degree students are part of complex networks, that extend to their home countries and academic institutions where they have studied and acquired the bachelor's degrees. The objectives related to their master's studies – both personal (identified on the individual level) and collective (identified collectively with JYU IT Faculty) are primarily related to academics and therefore, utilitarian in nature. The socio-cultural context of value creation and assessment is however not isolated to the university academic context but the overall environment that the JYU IT Faculty service ecosystem as well as the international student is a part of. For example, the students regularly use information provided by social media feeds of the university (The JYU official page on Facebook, the JYU International Degree Students page on Facebook, International Master's Students of the Faculty of IT, JYU page on Facebook) for staying abreast with all kinds of events directly organised or recommended by the JYU or the Faculty of IT. These range from professional networking events to student welcome parties as well as cultural events. Not all individual IMDP student users of these social media feeds, therefore follow these pages with the same objectives. But they are able to disseminate information relevant to them by enquiring within their personal networks-based interactions. It was discovered from the interviews that there also existed students not too keen on using social media who found other ways to find latest information using email newsletter subscriptions that they discovered via their student tutors or existing students in their networks. While doing this, they were also able to influence the newsletter publishers to provide Finnish translations for the non-Finnish audience.

> "I'm subscribed to the FS mailing lists as well as international degree students mailing list. Also, I'm subscribed to the IT Faculty's Linkki mailing list as well. Although the emails in there were almost always in Finnish but then some of us complained and requested that the information should be accessible to all. So now they do have english translation sometimes, when they deem it important. They are not targeted for me only,

> obviously, I'm supposed to find interesting stuff that I feel is important for me. And once in a while I do come across interesting information that I find useful."

When it comes to forming an understanding of the networks that the IMDP students are part of, it was interesting to observe that most of the interviewees remembered the formal interlinkages and their introduction to the professional networks – through introductory lectures during the orientation week during their first days at the university, demos during the first lecture by the course instructor, or through individual help that they might have sought from the IT Help Desk.

> "I think we had this introduction to university studies course in the very beginning when I started my bachelor's degree and they basically introduced us to all the possible tools and services that we could use and showed us how to do what, basically. But for example when I study courses with the international students here, I have seen the course instructor or then some administrator just sends the link to a new tool with brief introduction during the first lecture and then tells them to ask any questions that they might have or seek help for any issues that they might end up facing."

But as the interview progressed further, they acknowledged the importance of subtle inputs from existing students, especially the Finnish degree program students as well as well as other students from the JYU IT Faculty that they were introduced to them as part of an event or because of common connection with their student tutors. In one isolated case, a student admitted getting most of the information as well as "how-to" from their fiancé who was a former student at the JYU Faculty of IT. This particular example emphasises the fact that what and who constitutes the user's professional and personal network affiliation is ever evolving based on context and not really "*engraved in stone*".

> "My fiancé who has studied here for a while has on most occasions shown me how to do stuff or where to go to be able to find particular thing and so on."

Interactions that constitute these network affiliations grow to be more complex and extend across service ecosystems as the user proceeds over multiple iterations of the service lifecycle. For example, students who had been assigned student tutors who had been involved with tutoring international students during previous academic years, were able to get contextually relevant information because of the tutor's experience with students from similar cultures or even academic institutions in some cases. This is consistent with the observation of Jack (2005) that users who share one or more resources in similar or same context, stand to benefit either in one direction or mutually. In this case, the tutors, appointed and trained by the JYU, act as facilitators (an operand resource in this case) for integration of the resource i.e. knowledge acquired during previous tutoring experience. The JYU International office, as the designated body for identifying and appointing student tutors is the key in facilitating value creation for the international students where while assessing the competencies of the poten-

tial tutor candidates as well as training the selected tutors for specific tasks related to organisational objectives. Just like the evolving nature of networks, the nature of the ongoing service process is also fluid and depends on the user's abilities as well as perceived image of the self. For example, in a certain situation where the service experience is not satisfactorily helping a student achieve their objectives, they use their competencies as well as their cultivated image of the self to classify the situation as either a service delivery process that they are not capable of handling or a service recovery process that the service provider has not handled efficiently enough. While analysing the empirical data, it was observed that this classification was also affected, to a high degree, by the cultural contexts and basis of the users. Users from eastern cultures, deemed a less than satisfactory service experience as originating from their lack of competencies than a lack of properly managed service recovery process, to a higher extent. They were also less likely to seek help from designated sources like the help desk owing to their belief that they lacked the necessary competencies for using the digital tools in order to achieve their objectives. Within their value creation sphere, they were more likely to rely on indirect interactions than direct interactions for resolving such issues.

> "Well I think at the end the final solution is to ask the IT services of the university and I do know where they are so that is fine. But if it is a small matter for example I remember a couple of time this happened - I wanted to look up a research paper and I was not able to find it even though I knew that university do have access to that journal but I still couldn't download it so I just went and asked the library staff and they promptly showed me what I was doing wrong."

In a service ecosystem as complex as the University of Jyväskylä, it is almost impossible for the service provider to account for all the tools and small services that make up the service experience. This is more evident when the user group is that of the IMDP students. The students, on an average are expected to be here for only two academic years and the university as well as the Faculty of IT, tries to make the new students familiar with only what is deemed essential. This leads to quite a few of the auxiliary but useful services nonetheless, being removed from initial introductions. Students who had a more exploratory and problem-solving attitude were more likely to discover such auxiliary services.

> "Well most of them for actual champion by the instructors. But some of them for example now that I'm thinking about it like Mendeley is a tool that is provided by the University. you can use it for managing the citations and organising the research papers - and that one I got to know from the University Library. And of course, there's obviously this expression regarding word of mouth that works, so there's stuff that I've got to know about from Friends."

> "Now that I remember, I once forgot my password to the JYU services account, and I had to go through a lot of different web pages in order to find out the right thing to do. It was difficult to find the correct information initially but once I found it, it was easy to follow the instructions and recover it. "

Whether they spread the usage of these onto their colleagues and fellow students depends on their attitude towards helping others with problems. Some users are more pro-active in the sense that they try to spread the word about a new discovery since they find spreading such information useful in their larger context of use. Others may be more reactive and wait until they have been asked for help before they help someone out. From an S-D Logic viewpoint, the first group is more of an operant resource while the second group is an operand resource that needs an operant resource in order to better integrate it into the ecosystem. The service provider though, still has the opportunity to encourage the dormant, operand resources to wake up and be operant by using platforms as elementary as self-help knowledge hubs, for example.

> "So, after finding out about it, that you can print a document from wherever by just sending an email to the printer (service) I said well this is very useful information. Then I compared to online instructions that were available on the JYU website and I compare that the instructions in Finnish were ok but the ones in English were outdated. Later, I just realised that there is a lot more information on the Finnish version instruction page as compared to the English version. They have recently switched printers from Xerox to Cannon and I think on the English version the information is still about to Xerox printers. The first part of my experience with this was good. So when I said that "I can't print off campus, is there a way to do that?" the person replying to my email actually gave me a very straightforward solution to my problem. I have not actually checked if they have updated the instructions on the English page yet. I didn't get any reply when I had sent them an email saying you know you should change to instructions or update instructions about printing on the English page as well."

One of the most potent but likely to be overlooked indirect network interactions are those that the users have with users of similar services in other ecosystems. The interactions may be mediated via direct interaction users or may be supported by other information systems such as forums and feedback channels. At the JYU for example, Moodle is one of the most widely used learning management systems amongst a few others. The JYU implementation of Moodle has been customised to suit the requirements of the ecosystem. Some interviewees who had previously used Moodle in other academic ecosystems or interacted with users of Moodle from other academic ecosystems had adverse feedback for Moodle as an LMS for the simple reason that they found the use cases as well as customisations not exactly user friendly.

> "You have Moodle as one of the learning environments, but Moodle is pretty shit to be honest. It's so customised as compared to other implementations that I have used or seen other people use. It's pretty troublesome to use in that nobody really uses it but then when you necessarily have to use it it's not exactly intuitive."

7.2.2 Evolution of the IMDP Student's Shadow Persona

As discussed before, in order to be selected as an IMDP student the applicant has to have necessary academic qualifications, including a bachelor's degree from a certified academic institution. Owning to this, all the interviewees had previous experience of being in an academic environment while also being part of the digital service ecosystem that such an institution offers. Since the processes as well specific tools were not entirely identical in all the cases, the interviewees had varying degrees of experience with the services offered as part of the JYU digital service ecosystem. For example, some of them had experience with a much more elaborately digitalised library system as compared to the JYU. They bemoaned the lack of free access to quite a few modern-day online magazines as well as subscription journals. On the other hand, a few students had no interface to a digitalised library in their previous experience as an academic student and hence were very new to the self-service digital tools that JYU library makes available. In both the cases, the interviewees started at the base of the shadow persona system on the service lifecycle when the library-based services were considered. Some of them needed elaborate help from their tutors in order to understand how the complete system worked while the others needed to understand what was lacking as compared to their previous experiences and how JYU library system needed new skills on their part for accessing relevant content. In terms of specific actions mapped to the previously identified digital competencies, this required knowledge – specifically for defining their needs and then attitude for adopting to a relatively new system.

As established before, not all users graduate to higher levels on the shadow persona scale as they progress with the service experience lifecycle. In case of the interviewees this was especially influenced by their personal objectives which, in turn had been shaped by the institutional objectives. One of the students, who had been a bachelor's degree student at the JYU Faculty of IT before starting with the IMDP, was already on "The Intermediate" shadow persona level for most of the services by the time he started with the Master's degree. He found it imperative to help all the new students around him with their questions and therefore, in no time graduated to being "The Proficient" and in case of a few digital services such as Korppi, "The Expert". He was not only able to define his own requirements and achieve them, but also able to influence the objectives as well as outcomes of the new colleagues.

> "When I started in MOTEBU I was the only person in the whole group who actually knew the system. I had already spent four years at the university and at the faculty, so I actually was pretty familiar. So, I was telling someone or the other how to register to a new course - "Oh, you just go to Korppi and search by the course name or code." Or "you can register to a new course in Korppi" or "you can drop from course in Korppi - all you need to do is this or that". Because my background is a bit different from the average student, I was able to help people out with their issues a lot and much faster maybe."

In another case, a previous bachelor's degree student who had been nominated as a tutor for international degree students for the new academic year, realised the importance of becoming "*more than just familiar*" with the existing tools and systems if she wanted to fulfil her responsibility as a tutor. Therefore, she read about the different services, sought help where needed until she felt she was satisfactorily ready to be the guide to her new incoming colleagues. This is a great example of the collective institutional objectives influencing and shaping the objectives of an individual user thus encouraging them to graduate to higher levels on the shadow persona scale for the service experience lifecycle.

The shadow persona scale for service experience lifecycle is also a good way to ascertain how well the users understand the purpose and goal of a service provisioned by the service provider and match them to their own objectives and related actions. For example, perceived beginner or intermediate level interviewees were referring to tools with different usage goals in same or similar contexts of use while on the other hand perceived expert and proficient users were able to discern the usage goals and match them to the goals of the service. They were also able to define their expectations more clearly and give a background about what were there reasons for certain expectations.

> "I would say it really depends on the tool for me. For example, Korppi has a different purpose as compared to Optima. For me the two more important things are security and the visual part of the user interface. Security is obviously very important, I don't want my academic information and grades etc. compromised and available publicly without my consent. I really hope the systems are very secure - especially being part of one of the oldest IT faculty in Finland and having some of the best researchers in the field of cybersecurity."

The context of use being affected by intermingling of the environments and objectives was evident in the way most of the interviewees were able to clearly identify the scope for improvement and define by comparing and contrasting with other digital services and systems that they frequently used outside the academic JYU digital ecosystem. Wishes such as mobile friendly, single portal for all tasks with SSO (single-sign-on) authentication were a theme repeated by most interviewees when asked about possible future improvements. This is not withstanding the fact that the JYU already tried to provide a consolidated collection of links for different services catering to students at the time of the interview.

> "Multiple user credentials. Well ok, some of the systems like Optima and Korppi have the same username and password combinations but then there are other tools that have different user credentials. It'd be nice to have something like a single sign on feature. It's very hard to remember if you are logging in from a non-personal device that does not remember your passwords."

One very interesting observation from the empirical study was that several of the IMDP students who had started out as a beginner shadow persona, had graduated to intermediate levels within one academic year or sooner. But in

course of their moving to a higher persona, their objectives, socio-cultural contexts as well as digital competencies had evolved as well. Several students who developed an affiliation for pursuing an academic career, chose to develop their competencies in using specialised academic tools – for example for managing research practices, citations and studies. These students were pro-actively exploring the JYU service ecosystem for different tools and resources made available for such endeavours. On the other hand, quite a few other students, who decided to shape their career by returning to the industry, were more interested in pursuing skills related to tools and services that would help them further develop their professional networks by making use of resources such as an alumni network.

> "Like Mendeley is a tool that is provided by the University. you can use it for managing the citations and organising the research papers - and that one I got to know from the University Library. I came to know about it while searching around but then realised that the university licenses it for its students and that was definitely going to be very helpful for me in organising my research."

> "I have been looking for that since the time of my admission and I have not been able to find anything officially managed and supported by the Faculty but there are some other JYU faculties that have their own official alumni channels. Not very extensive, but still something. It shapes a good perception for the new prospective students and also gives value in terms of what the graduate students can piggy back on - experience, contacts and so on."

This observation supports a very important reasoning from the proposed framework. Once a user has been mapped to a specific shadow persona on the scale and has been helped by the service ecosystem (using the right kind of resources) to meet his objectives and graduate to the next level, the user's shadow persona (in terms of objectives, available resources as well as digital competencies) needs to be reassessed because the user has been evolving as part of the new context as well. The service provider can't just assume that every user will graduate to the next level as an ongoing activity just because they graduated from the previous lower level of the shadow persona scale on to the next one.

8 DISCUSSION

This chapter looks back at the original objectives of this research and evaluates how well these objectives have been met in terms of answering the three research questions that were stated in the introduction to this thesis report.

8.1 Addressing the Research Questions

A secondary research objective of this report was to establish a substantial understanding of the construct of Perceived Service Quality before starting out with achieving the primary objectives of this research. The exact research question related to this objective was:

What is Perceived Service Quality and how is this construct applied to digital services in particular, in academic research?

This question is answered in the second chapter of this thesis report where the conceptual nature of the construct of perceived Service Quality is discovered to be a relativistic, cognitive, post purchase evaluation of the overall service experience (Roest and Pieters 1997). Various models that seek to quantify and measure Perceived Service Quality from Nordic, American and hybrid perspectives are then compared in depth. The academic research related to Perceived Service Quality is then explored from the viewpoint of both information systems and service marketing as a theoretical basis and it is established that academic research in this particular respect is highly fragmented and borrows from outdated definitions, dimensions and paradigms and therefore needs to be looked at afresh given the special nature of digital services.

The primary objective of the research, as laid down in the beginning of the report was to explore how value, as a conceptual aid can be used for understanding the perceived service quality of digital services. One of the primary research questions that this thesis report sought to answer was:

What are the broad-based drivers of value creation and assessment for users of digital services?

As described in the objectives, Service Dominant Logic (Vargo and Lusch 2004; Lusch and Vargo 2014) and Service Logic (Grönroos 2006; 2008) were used as theoretical lenses for this purpose. Both S-D Logic and Service Logic concur that individual users (actors) integrate unique resources to their networks and subsequently the overlapping ecosystems in order to co-create value which cannot be determined by any of the actors in isolation. But the creation and assessment of value is rooted in the users' context which is not isolated from the service ecosystem either (Chandler and Vargo 2011), implying that context is socio-cultural in nature (Edvardsson, Tronvoll, and Gruber 2011). This observation is further enforced via an interpretation of the Social Actor Theory as applied to information systems (R. Lamb and Kling 2003).

While both S-D Logic and Service Logic agree on value being co-created by users and service providers, where they differ is the identification of primary value creator in the process. While S-D Logic identifies the service provider as the value creator who needs to engage users for co-creating value, Service Logic earmarks the user as the main value creator while resting the prerogative of co-creation with the service provider who must collaborate and integrate resources with the consumers' (users') value creation sphere in order to tap all possible opportunities of co-creation. This detailed explanation for value creation (and co-creation) as well as assessment as explained by Service Logic is better able to explain the broad-based drivers of value creation and assessment for the user of digital service which are grouped in the form of objectives, socio-cultural contexts and digital competencies – all adhering in varying degrees, to the Service Dominant Logic viewpoint of users bringing their unique resources and contexts to integrate with the processes of the service ecosystem The user's objectives are derived from both their personal and professional networks and reflect the motivation of a user for achieving particular results that are influenced by their usage of a digital service in their socio-cultural contexts. The digital competencies are skills (resources according to SD-Logic lexicon) that define how the user of a digital service pursues the set objectives or redefines them in the context of a dynamically evolving service experience lifecycle.

One major learning from understanding the broad-based drivers of value creation and assessment is that these drivers – objectives, socio-cultural contexts and digital competencies are not static for an individual user. All these drivers shift and evolve dynamically during the service experience lifecycle leading to an evolving user persona that is primarily, a function of these broad-based drivers. This learning goes a long way in answering the other primary research question:

How does the evolution of an individual user, during the service lifecycle (as understood by the broad-based drivers of value creation and assessment) affect the perceived service quality of digital services?

While a user's persona evolves as a function of their dynamic broad-based drivers, the creation and assessment of value at various iterations of the service experience lifecycle for this same user is uniquely determined. The value is primarily created by the user of digital service who identifies and integrates the available resources (both operant and operand) while simultaneously assessing value during the digital service experience lifecycle. A more proficient user integrates more resources to the ecosystem that may influence and shape the service experience lifecycle of less proficient users within the service ecosystem. It has been established that co-creation happens in the user's environment, where the service provider may interact and be a co-creator of value (Grönroos 2008). The service provider, therefore, has the opportunity of interacting with the users and understanding their objectives as well as their existing resources in the form of networks (that shape socio-cultural contexts) and digital competencies. By making use of this opportunity, service providers may influence the overall perception of quality by engaging with the users at various points of the service experience lifecycle and influencing their objectives, their choice of resources (both identification and integration) and help them develop their digital competencies in a manner that the users go on to influence other users within the service ecosystem who, further influence more users in turn – thereby creating a controlled network of influencers which may be harnessed for shaping the perception of quality positively improving it within the respective users' service experience lifecycles and within the service ecosystem for the service provider.

8.2 Implications from the Study

8.2.1 Implications for Digital Service Providers in General

Based on the learnings from this research, the proposed two-stage framework as an aid for understanding the perceived service quality of digital services is understood to be a continual, circular process where in the dynamic evolution of the user's persona leads to evolving broad based drivers – thus leading to fluctuating levels of value creation and assessment during the service experience lifecycle. Stage I deals with understanding how users of digital services create and assess value in their socio-cultural context. It seeks to understands the complex nature of underlying networks that the user employs in order to identify and integrate resources in a way that the user fulfils his objectives - personal, institutional as well as a hybrid mingling of both. Stage II seeks to understand the evolution of the user's persona during the service experience lifecycle via the evolution of their objectives as well as digital competencies.

Empirical evidence gathered and analysed as part of the research proves that the digital service users' resource integration indeed happens in their own environment (Grönroos 2008) with a wealth of complex underlying networks formed within the context of socio-cultural exchanges (Chandler and Vargo 2011). The digital service user, when considered as an individual at the centre of his own value creation environment as part of the larger service ecosystem can indeed be understood in terms of his objectives, networks and resources when using value as a theoretical lens and S-D Logic as the ladder to climb up to the vantage point for making the best use of this lens. In order to use the proposed framework as an aid to understand how users perceive quality of digital services, the focus should be on observing the user as a resource integrator and his evolution while doing so. This will help service providers identify opportunities for interacting with the user and improving the perception of quality across the user base. The approach, visually described in (Figure 12) could be formulated as follows:

Stage I:

- Identify (and influence) the objectives of the digital service user base.
- Identify the socio-cultural contexts of the digital service user base.
- Identify digital competencies of the digital service user base.

Intermediary stage:

- Map user base on the shadow persona scale along the service experience lifecycle.

Stage II:

- Identify users that could be potential graduates to next level personas on the shadow persona scale.
- Make targeted resources available to users based on their current position on the shadow persona scale and influence them to graduate to next levels.

As discussed before, since all users do not have the same objectives and sustained levels of motivation throughout the service experience lifecycle, once a group of users has been established as corresponding to specific shadow personas on the service experience lifecycle, the approach needs to be applied with a fresh perspective to new users as well as the existing set of users in order to understand their fresh objectives, newly acquired contexts and improved (or diminished) digital competencies. The complete approach using value as aid for understanding perceived service quality of digital services is described in (Figure 11). The framework incorporates essential earning from S-D Logic (Vargo and Lusch 2004), Service Logic (Grönroos 2011b) and social actor theory (R. Lamb and

Kling 2003) while also giving due importance to the evolving contexts of the digital service user (Chandler and Vargo 2011).

One of the main aims of a digital service provider is to acquire new users and retain existing users. A perception of sustained high level of service quality for the digital service goes a long way in achieving this aim. When the service provider is able to use existing users as resources for improving perceived quality as a means to achieving the aforementioned aim, it's a win-win situation for both the service and the provider. The challenge, therefore, is to identify and influence the right users at the right times.

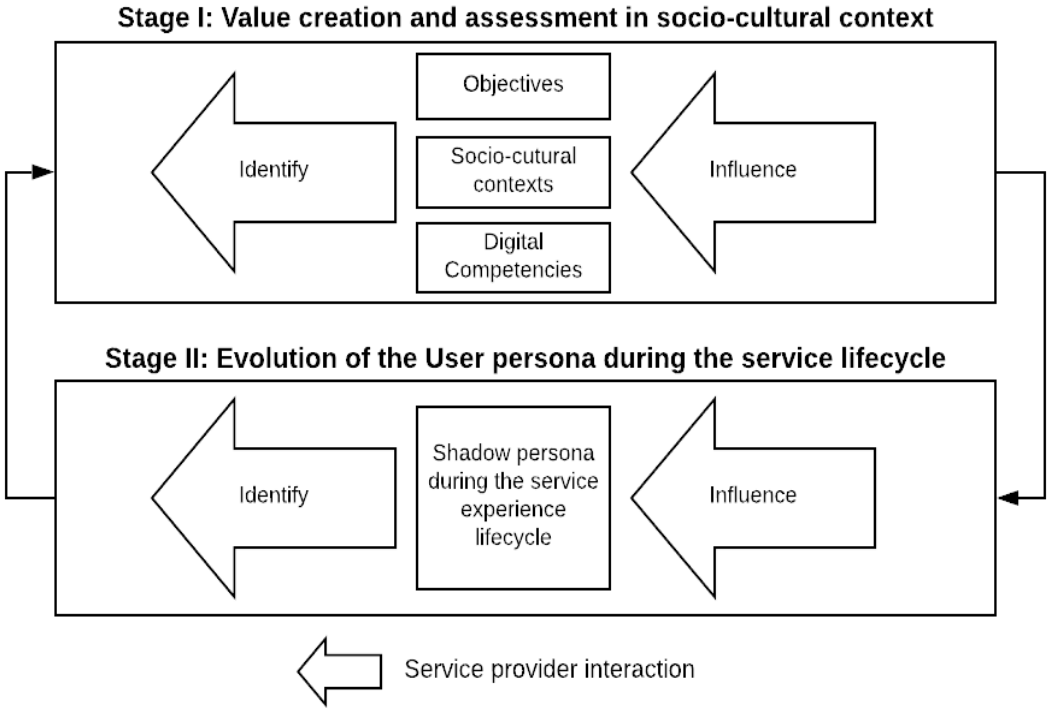

Figure 12 Two stage approach for using value as an aid to understand Perceived Service Quality of Digital Services.

8.2.2 Implications for the Case Organisation

International degree students at the University of Jyväskylä are a unique user group, due several reasons, some of those being:

1. **Study period**: International students register for a full-time academic programme at the university, the duration of which is less than half the duration of study period of local (Finnish) degree students. The study period has a considerable influence in shaping their objectives when it comes to using digital services provided by the JYU.

2. **Previous study programme:** The international students collectively form one of the most varied user groups based on their place of origin or the place where they acquired the previous (qualifying) degree and hence gained an exposure to digital services offered by academic institutions. The exposure ranges from being familiar to several similar or identical digital services as offered by the JYU to having been part of institutions that have not adopted digital channels at all.
3. **Socio-cultural leanings:** The international students acquired as well as inherited socio-cultural contexts play a major role in the behaviour exhibited during the use of relatively new as well as familiar digital services. This ranges from exploratory - where they are likely to treat the first iteration of the service experience lifecycle as an interesting learning opportunity, to mandatory – where they are likely to treat this as a necessity of being registered for a degree program at the JYU. The former are more likely to critically analyse the complete service experience lifecycle and possible shortcomings than the latter, who, based on interview results, are more likely to pursue alternate ways and channels (than digital) in order to achieve their objectives, if they come across shortcomings – either with the service provision or in their own competencies. As discussed in a later section related to possible future research, these socio-cultural leanings are not necessarily a result of the user's place of "origin" and the causes for these leanings need to be established better as part of newer research initiatives.
4. **Digital competencies:** Although the research focussed on international students at the Faculty of Information and Technology, the digital competencies, as defined in section 4.3 and identified in (Table 6) varied considerably for the interviewees depending on a number of factors including their area of study or research, interests as well as time spent as student at the JYU Faculty of IT and other academic institutions with similar digital services available for their students. International degree students who had spent a considerable time studying bachelor's courses at the faculty, tended to be more pro-active in solving problems for their rather recent colleagues and were also able to redefine the problems faced by them, based on recent information that they had access to, as compared to online self-help articles available through the JYU website.

As explained before in section 7.1.2, the JYU International Office appoints tutors for new incoming students at the beginning of the academic year. The tutors are not evaluated specifically for their digital competencies when being selected from a pool of prospective applicants after an interview process but are expected to be one of the major influencers for promoting the use of the various digital services available at the JYU for the international students. Based on the interview with some of the international students who had also served as tutors for international students, solving issues and answering questions related to the usage of the digital services became one of their main tasks as international student

tutors. It is here that the Faculty of IT can employ the two-stage approach (Figure 12) to identify potential Expert or Proficient students from the faculty, while evaluating the interview candidates for the position of international tutors. Making the new IMDP students "digitally aware" can be made a part of the tutor's job description so that the task is taken up more proactively by the tutors.

Apart from using tutors for improving the perceived service quality of digital services, the Faculty of IT especially needs to tap the digital competencies of its international students so that it co-creates value with them during their use phase – for example, when defining their specific objectives related to academic assignments as well as mandatory degree components like the Master's thesis. This may even be in the form of encouraging the students to undertake deeper academic research related to digital services related issues that they have themselves encountered as part of their student life. A constant underlying theme of the interview results was related to the fragmented nature of digital services at JYU and how multiple tools for achieving the same objective added to the confusion while pursuing academic activities related to their IMDPs. The Faculty of IT could address this confusion, in part, by having a better understanding of the collective objectives of the degree students for a particular IMDP and focusing on targeted improvement of digital competencies related to the identified objectives.

8.3 Theoretical Contributions of the Study

By bringing the digital service user at the centre of the digital service ecosystem, as the primary creator of value, the phenomenon of perceived service quality has been explained from an entirely novel perspective as compared to existing academic research on perceived service quality, discussed in the first chapter of this thesis. While a few the of existing models and frameworks look at perceived service quality as a user-centric concept, the user in these models is envisaged as an isolated entity with similar set skills and resources at his disposal. Furthermore, the measurement of quality in these existing models is primarily dependent on the outcome or a result of the service process (A Parasuraman, Zeithaml, and Berry 1988; Dabholkar, Thorpe, and Rentz 1995; Brady and Cronin Jr 2001). The models that consider the aspect of value creation during a service process again consider the construct of value as the result of a process and it's suitability to the service provider's objectives (Long and McMellon 2004; Dabholkar 1996; Anantharayanan Parasuraman, Zeithaml, and Malhotra 2005). This essentially means that the everything that the user brings to the table as a digital service consumer has been more or less neglected in most academic research related to Perceived Service Quality of digital services, thus far. One of the early suggestions about using value as a means to understanding perceived service quality has been put forth rather recently (Tate et al. 2014).

For the purpose of exploring value as aid to understanding perceived service quality of digital services, this study lays it's theoretical basis in the foundational premises of S-D Logic (Vargo and Lusch 2004; Lusch and Vargo 2014) and

their revisions in the form of Service Logic (Grönroos 2008; 2011b). Service Logic especially posits the user as the actual creator of value within his own value creating space with the service provider having opportunities to co-create value by integrating with the user's value creation processes by using the service delivery and service recovery processes to their advantage. Thus, the first theoretical contribution of this research is an effective explanation of value creation and assessment, especially in a digital service ecosystem where the user, with his socio-cultural context has operant and operand resources from various networks, at his disposal.

The research centring around S-D Logic lays a lot of emphasis on the user as a resource integrator who not only integrates his own resources to the service ecosystem, but also uses these resources to identify other potent, sometimes operant resources, available in a service environment that can be used to create value once integrated during different parts of the service experience lifecycle. This research identifies two important resources that a user integrates for creating value during the service experience lifecycle – complex networks and digital competencies. Both the networks and competencies are resources rooted in the socio-cultural contexts of the user and are affected by their personal and collective (professional or otherwise) objectives for using a digital service. The research further details on what exactly contributes to complex networks and digital competencies, from the viewpoint of an individual user of a digital service.

Finally, this report builds on existing research related to the information system user as a social actor by employing persona-based user modelling methodologies for proposing a framework for using value as an aid to understand perceived service quality. It is proposed that the service provider, as a value co-creator (Grönroos 2008; 2011b), has the onus of integrating with the digital service user's value creation processes to identify and influence his objectives as well as existing resources. This knowledge may be used to provide more relevant resources as part of the larger digital service ecosystem to help the user develop and improve necessary digital competencies – either by using dedicated resources made available by the service provider, or by integrating resources identified within the service ecosystem. Existing proficient service users form one of the major groups of such operand resources available for operant resources within the service ecosystem.

8.4 Evaluation of the Research

The conventional metrics for verifying and evaluating the trustworthiness of qualitative research are credibility, transferability, confirmability and therefore dependability (Halldorsson and Aastrup 2003; Jackson, Drummond, and Camara 2007). These four metrics have been duly considered and used as benchmarks while carrying out this research and subsequent writing of the thesis report.

The first metric, that of credibility, primarily draws from the acceptability of the results of empirical study as compared to the claimed reality (Gummesson

2000). The data collection approach used for the purpose of empirical research in this study has been designed to be credible. The focus of the study was narrowed down to a specific group of users in a very planned manner. Empirical data was then collected, primarily via direct, semi-structured interviews of subjects from the target user groups and secondarily by a sustained, first-hand observation of the model organisation. The interview subjects were chosen so that there was a balanced representation of different groups – across skills, competencies, academic objectives as well as socio-cultural contexts. The data analysed and interpreted from the primary source was found to be in conformity with the data from the secondary source i.e. direct observation.

Transferability measures the possible extent of generalisation of claims made as a result of the study (Halldorsson and Aastrup 2003). A concerted effort is made as part of writing this thesis report, to give a detailed contextual overview of the JYU digital service ecosystem in general and the JYU Faculty of IT's own ecosystem in particular, so that the basis of the study and the conclusions being drawn can be well understood and the results can be extrapolated to a similar digital service ecosystem.

Confirmability as a metric seeks to minimise the researcher's bias and bring out actual results (Halldorsson and Aastrup 2003). The proposed theoretical framework is not specifically in the context of the case organisation. The framework is proposed as a general, all-encompassing theoretical approach that should, ideally, be applicable to all digital service ecosystems where users have access to resources from complex underlying networks. The empirical data collected from the study in the model organisation (The JYU Faculty of IT) is a means to find the applicability of the proposed framework to at least one possible organisation. The guide for conducting the semi-structural interviews was prepared carefully, with due consideration to common competencies as well as specific situations that an international student is likely to find themselves in, while pursuing an IMDP. The guide was also reviewed by the research supervisors, who also happen to be part of the academic group at the JYU Faculty of IT. This also, helped minimise the singular researcher's bias that is likely to become a factor if the interview questions are designed in isolation. The data collected during the interviews is analysed via labelling techniques while also triangulating the researcher's own observations as an IMDP student, thus achieving the objective of criticising the data from multiple viewpoints and angles (Myers 2013). The data from interviews was found to be consistent with the researchers own observations to a considerable degree. It can thus be concluded, that the research was confirmable to a considerable extent, with due effort accorded to the purpose of minimising the researcher's bias.

Dependability as metric seeks to measure the degree of reliability of the research and the subsequent results (Jackson, Drummond, and Camara 2007). For the scope of this possible research a literature review of the main construct being discussed – Perceived Service Quality of digital services, was done and presented from both the perspective of service marketing literature as well as information

systems literature. Both the perspectives were accounted for whenever other relevant topics such as context and persona were discussed.

This research presents a novel, two stage framework for understanding Perceived Service Quality using value as an aid. While doing so, concepts from service marketing literature – Service Dominant Logic, Service Logic, value-in-context, value-in-use, value-in-socio-cultural-context as well as information systems science – social actor theory, persona modelling and other service design tools and digital competencies are used. It is a complex task to tightly correlate and bind these concepts together for forming a new theoretical framework. The researcher has made the best effort possible at achieving this goal.

8.5 Limitations of the Research

It has been the author's endeavour to carry out this research as accurately as circumstances allowed for. However, all the measures notwithstanding, there are several points on which the validity of the results of this research can be questioned owing to the various limitations.

8.5.1 Confirmation Bias in the Empirical Data

One of the primary issues identified is with regards to the empirical data. Of the 17 interviews conducted, data from only 14 was considered useful with 3 of the interviewees being inactive students without considerable study time at the university who were not well equipped to provide insights about the digital services at the Faculty of IT, JYU. The other issue with regards to interviewees stems from the fact that almost half of them had a fair idea about the theme of the research and at least 4 had a very good understanding of the concepts that the research seeks to build on, these interviewees themselves being students at the same degree programme under the same faculty. This manifested in the form of the specific interviewees understanding the underlying themes related to the questions of the semi-structured interview and using technically relevant terms and examples to formulate their replies. While this was also an (positive) indication of the skills of the digital service users being interviewed, it also forms the basis for what has been described as a "confirmation bias" – wherein information being propagated is interpreted and remembered in a way such that it systematically (but unintentionally) impedes the possibility of a research hypothesis being rejected (Oswald and Grosjean 2004). The bias is majorly a result of unintentional information processing techniques being subconsciously used by the interviewee and not so much a result of deceptive strategies to fake data.

8.5.2 Narrow Basis of Empirical Data

The empirical data collected as part of the research is primarily derived from international students specific to a particular field of study and doesn't represent all types of users of possible digital services in its entirety. Although, it can be argued that the interviewees are users of other digital services during their normal routines and form opinions based on service experience during usage of those services, the data collected and analysed for the purpose of this report pertains to their usage of only the university's digital services. To be able to claim that the proposed two stage approach for using value as an aid to understand Perceived Service Quality of Digital Services, is universally applicable to digital services of all nature, the basis of empirical data needs to be broadened. This could however, be explored as a direction for future research.

8.6 Suggestions for Future Research

This explorative research conducted via the means of an interpretive case study is obviously not backed by substantial empirical data for considering the proposed framework applicable to all other such organisations. The empirical data for this study was limited in scope since the study was conducted using one particular sub-organisation in a larger academic setting (The Faculty of Information Technology at the University of Jyväskylä, specifically from the point of view of IMDP students). The next logical step to ascertain the applicability of this framework to other similar organisations therefore, would be to collect empirical data from other faculties at the JYU and compare results.

However, based on results of the current empirical study, a few observations have already been made which can help define the future course of action for refinement as well as more rigorous testing of the framework.

8.6.1 The Effects of Culture(s) on the User's Context

The proposed framework considers context as a function of the digital service user's socio-cultural backgrounds which affect the way networks are formed, retained, redistributed and recalled during resource integration process. During the analysis of the empirical results however, it was observed that culture as an isolated function has a much deeper effect on how value is created and assessed. As discussed previously, interview subjects from eastern cultures were more likely to blame the lack of satisfactory service quality on their own lack of satisfactory digital competencies. In contrast, however, one particular interview subject with supposedly similar cultural affiliations, but having been part of the organisational and social culture in the west for a considerable period of time (due to both work and personal affiliations) exhibited a more objective asessment of value and was straightforward in pointing out how the unsatisfactory results, in

his opinion, were due to the lack of initiative on the service provider's part. This indicates that culture is not just a set of values inherited as part of owing origin or allegiance to a geographical location. The concept of a national culture, primarily rooted in a nation state, has in fact, been suggested as too simplistic and therefore problematic. Myers and Tan (2002) concur with Smith (1998) that a variety of more relevant and definitely important factors are ignored when culture is represented as a limited set of aggregate dimensions such as in the case of Hofstede framework. As part of a recent research on the topic of improving the understanding of the effect of culture on requirements, Tuunanen and Kuo (2015) have provided a foundation for value-based prioritization of requirements which can help segregate the requirements (originating from personal constructs) of users based on different cultural settings or geographical locations. Therefore, developing a better understanding of how culture shapes context and hence affects the assessment of value and perception of quality of digital services is a very compelling future research to undertake based on the outcomes of the current research.

8.6.2 The Destruction of Value?

This research explores and satisfactorily establishes the potential of using value (it's creation and assessment) for understanding the perceived service quality of digital services. In more recent literature however, the concept of value destruction has been gaining ground. In a purely conceptual, exploratory study Plé and Chumpitaz Cáceres (2010) propose that a misuse of own or the network's resources triggers what can be described as the co-destruction of value wherein misuse refers to inappropriate or unexpected integration of a resource by the actor. While co-destruction leads to an overall loss of value for the service ecosystem, it is likely to be perceived differently by the users in their unique contexts, as is established in this research already. In a study that conceptualizes the notion of value co-destruction by reviewing and synthesizing the scattered and scarce value co-destruction literature across interdisciplinary fields, Lintula, Tuunanen, and Salo (2017) present perceptions as a key dimension of a value co-destruction framework, apart from orientation and resources where perceptions act as an embedded trigger resulting from prior expectations. These perceptions, borne out of prior experiences may lead to either insufficiency of perceived value for individual actors or differential value co-destruction (and reciprocal co-creation) for resource integrating actors in the service ecosystem. M. Smith (2013) opines that with the increasing emphasis on the user as a resource integrator, the demand on user's resources is bound to undergo a steady increase. This rising demand could also stem from the service provider trying to maximize the potential of the user's resources while conserving their own resources. In such a scenario, if users assess a loss in the overall value during the service experience lifecycle, owing to excessive use of their own resources, customer loyalty and service quality are likely to see a negative effect.

While the proposed framework encourages the service providers to integrate their own resources in order to help the users improve competencies and thereby make up for missing user resources in a service experience lifecycle, the notion of misuse of resources or misconception of value as "insufficient" due to better experiences during prior iterations during the service experience lifecycle makes for a crucial direction of future research.

8.6.3 The Effect of Evolved Revenue model

It is pertinent to mention here that prior to the academic year starting Fall (Autumn) 2017, most IMDPs in Finnish universities were completely free of cost to all student groups. Starting August 2017, however, the Finnish government allowed all the Finnish universities to charge a tuition fee for all the IMDP students coming in from outside the EU or EEA. Since the interviews for collection of empirical data for this study were conducted during the academic year 2016, none of the students interviewed were paying a tuition fee. How the notion of value and its assessment transforms when the users are actually paying for a service, has been documented in other academic studies (Zimmermann 2000; Brousseau and Penard 2007). In this particular case of JYU Faculty of IT as a service provider, it forms a compelling case to study wherein JYU as service provider made the shift from a freemium to prepaid mode of service. It is important to note, however, that the digital aspect of JYU's service is only presented as an auxiliary, value adding service and the tuition fees that the new students pay is a formal, academic tuition fee. Nonetheless, comparing empirical data between students who did and did not pay a tuition fee will be another future area where the JYU (and other Finnish universities where the IMDPs started to charge a formal academic tuition fee) digital service ecosystem is another interesting case for future research.

9 CONCLUSION

The main objective of this research was to understand how value can be used as an aid for understanding Perceived Service Quality of digital services. The research endeavour compiled in the form of this report successfully answers that question to a considerable extent and throws new light on how the concept of value explains the way users of digital services create and assess value and form perceptions of quality throughout the service experience lifecycle.

The initial part of this work deals with establishing the current understanding of the phenomenon of Perceived Service Quality in academic literature and the need for a fresh perspective from the digital service user's point of view when it comes to understanding the phenomenon of perceived service quality, in the specific case of digital services (Tate et al. 2014). The foundational premises of Service Dominant Logic and their revisions are then discussed for setting up a theoretical basis for the concept of value and its several derivatives discussed as part of academic literature including value-in-exchange, value-in-use, value-in-context and value-in-socio-cultural-context. This section also forms an understanding of the academic discourse around value creation (and co-creation) and how the idea of "*who creates value and who co-creates it in turn*" is different across the American (Vargo and Lusch 2008a; Lusch and Vargo 2014) and Nordic perspectives (Grönroos 2006; 2008; 2011b) of value creation for services. aFor purpose of this research, value co-creation as described by Service Logic (Grönroos 2008), better explains the role of digital service user's broad based drivers in creating and assessing value leading to a perception of quality during several iterations of the service experience lifecycle.

Based on learnings from S-D Logic and Service Logic, the concepts of environment and resources are further explored from a digital service user perspective, in the form of context, digital competence and the evolution of user persona, for a digital service user that is defined around his context and resources within the service ecosystem.

The theory building culminates in the form of a two-stage framework, stage I of which deals with explaining how the broad-based drivers – socio-cultural context, objectives and digital competencies of the users shape the user's persona

leading to an ongoing process of creation and assessment of value during the service experience lifecycle. Stage II deals with understanding the evolution of a user's persona as his objectives, contexts and available resources in the form of digital competencies evolve during the service experience lifecycle.

The latter part of the research deals with explaining the empirical research methodology used for conducting the research and discussing the implications of the research with regards to the case organisation in particular and digital services in general.

As a theoretical approach, the proposed framework is flexible in nature and therefore open to interpretation about its applicability. However, by using, context, personas and digital competencies as it's foundational blocks, the framework already proposes a solid set of guidelines as part of the two-stage approach for using value co-creation as an aid to understand Perceived Service Quality, in practice. The author opines that the framework is of considerable use when explaining the concept of user's value system as part of several modern-day frameworks that are based on value creation at their core but do not elaborate on how a service provider can understand the user's broad-based drivers that lead to value creation and assessment. As an example, the recent iteration of ITIL (Information Technology Infrastructure Library) – the ITIL v4, claims to be deeply rooted in the service perspective and considers the end user as the actual core for whom all value is created. The construct of this end user, however, and how the user creates and assesses value has not been well explained as part of ITIL (Cronholm and Gobel 2016). The framework proposed in this thesis, in parts as well as a whole, is well equipped to fill research gaps, especially where the construct of user has not been well explained from the perspective of contexts and resources. Nonetheless, the framework will need rigorous testing against empirical data from several different scenarios related to digital service provision before laying claim as an all-encompassing, globally valid approach. These and other possible limitations and shortcomings of the research have been elaborated upon as part of the discussion as well.

As a closing note to this research report, it is interesting to go back to the views of the author of the original work that introduced of the construct of Perceived Service Quality (Grönroos 1982b), as detailed in section 2.2.1. In a retrospective article, Grönroos (2001) states that his original research was guided by the endeavour to provide a service equivalent of product features on an entirely conceptual level, where the aim was to measure how perceived service quality dimensions explain customer satisfaction while "quality" itself was not supposed to be measured. In the same spirit of academic research building on existing literature, this research report, is a humble attempt at redefining the concept of Perceived Service Quality for digital services and their users.

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APPENDIX

Table 8 Interview Guide

Question	Competency	Actions	Keywords
Please identify yourself, stating your name, age and gender.			
Please specify the degree that you are studying for or graduated from, your specific program of study at the JYU faculty of IT, the total no. of credits that you have attained and the total number of years you have spent here as a student			Service Experience Lifecycle
How would you describe your general attitude to adopting to new digital services - for e.g. updating your phone or laptop to the latest version of the OS, trying out new applications and digital services instead of the conventionally popular ones etc.	Attitude	Adopt	Technology Adoption Lifecycle
The term digital tools here includes websites such as the JYU website, web and mobile based apps, communication tools like email, social media feeds like Facebook, twitter etc. How familiar do you think you are with the tools available to you as a student at the University of Jyväskylä.	Knowledge	Identify, Access	Familiarity
Could you please name a few of the tools that you have used for various purposes	Knowledge, Attitude	Evaluate, Adopt	Recall ability
Describe the various ways in which you came to know about these tools	Knowledge	Identify	
Describe a situation where you could use two different tools to accomplish the same task (for e.g. chosing and registering for an appropriate course, returning a course assignment, getting in touch with a course coordinator	Knowledge, skill	Define, Evaluate	Problem definition

etc.). How did you choose which tool to use?			
Describe a situation where you have been in touch with someone responsible for managing a web page or service such as Korppi or JYU home page, requesting updated information or suggesting changes? If yes, how has your experience been?	Attitude, Skill	Communicate, Manage, Evaluate	Recovery
Describe a situation where you have been helped by a colleague or classmate while facing issue with regards to a JYU digital tool	Skill	Integrate	Troubleshoot, Recovery
Describe a situation where you have helped a colleague or friend from outside the faculty with their issues related a JYU digital service	Skill, Attitude	Integrate, Manage, Communicate	Influence. Recovery
Do you normally know who or what service personnel to get in touch with in case one of the digital tools is not functioning well enough for you?	Skill, Knowledge	Manage, Identify	Help
Do you often have your own ideas about how to improve a digital tool when you don't get satisfactory or efficient results during your use? Can you describe a situation?	Skill, Attitude	Define, Create	Innovate
How do you come to know about events and happenings being organised by the IT faculty pertaining to both academics and in general?	Attitude	Communicate, Create	Social media
Do you think the quality of JYU digital services has improved as you have progressed with your studies? What specific improvements have you observed?	Skill, Knowledge	Evaluate, Identify	Service experience lifecycle
Do you think you are better able to utilise the digital services, than when you first started out as an international student? Why	Knowledge, Skill, Attitude	Define, Manage, Adopt	Service experience lifecycle

Do you often discuss new features introduced or upgrades to the JYU digital tools amongst your fellow students?	Attitude	Communicate	social media
Describe the ways in which you follow the different services of JYU on social media	Knowledge	Identify	social media
Can you describe a situation where you think the availability of a digital tool / service, which is not available, could have improved your efficiency and quality of work?	Knowledge, Attitude	Identify, create	Solution integration
What according to you, is a major problem with the quality of digital services offered to international students at JYU Faculty of IT	Skill	Evaluate	Service Experience Lifecycle
Do you have any suggestions for improvement or anything else to say which you think is relevant to the purpose of the interview?	Sill	Evaluate	
If you could sum it up, what two factors do you consider the most important when evaluating your experience of the quality of the digital service that you have used	Knowledge, Skill	Identify, Evaluate	