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Janine Frauendorf

Customer Processes in Business-to-Business Service Transactions

DUV GABLER EDITION WISSENSCHAFT

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Das Business-to-Business-Marketing ist ein noch relativ junger Forschungszweig, der in Wissenschaft und Praxis ständig an Bedeutung gewinnt. Die Schriftenreihe möchte dieser Entwicklung Rechnung tragen und ein Forum für wissenschaftliche Beiträge aus dem Business-to-Business-Bereich schaffen. In der Reihe sollen aktuelle Forschungsergebnisse präsentiert und zur Diskussion gestellt werden.

Janine Frauendorf

Customer Processes in Business-to-Business Service Transactions

With a foreword by Prof. Dr. Michael Kleinaltenkamp

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Foreword

Services cannot be produced without customer participation. This aspect involves significant consequences for services management. The integration of the customer and the integration of the external resources that customers need to provide require comprehensive means to coordinate the activities of suppliers and customers. Services management literature is based on the idea that the success of service companies mainly depends on an effective and efficient design of supplier and customer interfaces. As a result, academic and practice-oriented service management problems are concerned with managing service processes. However, most approaches are focused on the supplier process side. Here, numerous concepts as well as IT supported tools for service process documentation and service process management have been developed. Customer processes, on the contrary, have mostly been ignored even though it is obvious that they have a high impact on the overall success of the service process.

The present work is a major step forward to close that research gap. The author analyses the customer influence on efficiency and effectiveness of the service process depending on the customer's service process knowledge. The empirical data of the thesis was gained from a practice study: it was made in cooperation with a corporate division of T-Systems International that provides business customers with virus wall and firewall service packages for data network security. The study is based on the assumption that service customers have a script, i.e. a relatively precise image of the structure and process of the service transaction. Such a script essentially affects the coordination of supplier and customer process activities. Presumably, process efficiency and process effectiveness of a service transaction are more successful if there is a strong compliance between the customer script and the actual service process that is planned by the service provider.

This central hypothesis as well as further hypotheses was verified through an empirical study. As a result from the study, customer knowledge affects the specification of the customer script. Also, it is shown that the process design of the service provider has an impact on the specification of the customer script. The script influence on the service process success needs to be considered on two aspects: First, the customer script has an influence on customer satisfaction as a measure for service process effectiveness. Second, script influence on service process time as a measure for efficiency could not be verified.

These results bear significant consequences for theory and practice: The theoretical discussion comes to the conclusion that special types of service transactions can be differentiated

according to the transaction cost reducing effects of the customer script. This differentiation of various service types is based on the necessity to allow for customer scripts on the one hand and the learnability of the script on the other. With reference to the practical implications of the study, it points out that the allowance for customer scripts may result in innovative process design of the service provider as well as modified marketing of services.

The thesis addresses a topical problem of practical as well as academic relevance and presents various suggestions for the implementation in business practice. Therefore, the work will hopefully be met with high response from academia and practice.

Prof. Dr. Michael Kleinaltenkamp

Preface and Acknowledgements

In the summer term of 2006, the work at hand was submitted to the School of Business & Economics of the Freie Universität Berlin as a doctoral thesis. The thesis evolved from my job as a research associate at the Institute for Marketing in Berlin on the one hand and from my time as a PhD at the University of Otago in New Zealand on the other. During both periods, I have received a lot of support from several parties and persons. Their support has not only contributed to the success of the thesis but it also mattered to me personally which is why I would like to take the opportunity of the preface to express my gratitude.

My first acknowledgement refers to my supervisor and academic mentor Prof. Michael Kleinaltenkamp who has had a great share in the development and the completion of the thesis in its present form. To begin with, he has encouraged me to look into the subject and during the last few years, he has always believed in the success of my topic. I have not only appreciated his academic expertise that regularly revealed through some resourceful thought-provoking impulses but also his constantly kind and positive personality. It has always been a pleasure to work for someone and with someone who demonstrates such a high level of both professional and human excellence.

Furthermore, I deeply acknowledge the inspiration and input of my supervisor and second referee Prof. Juergen Gnoth. During the 20 months that I have spent at the University of Otago, he has been very helpful and encouraging, constantly offering professional advice as well as friendly support. Despite his many activities and responsibilities he was available for discussions at all times and provided me with constructive criticism. Very rarely, I have met someone with so many visionary and creative ideas as well as a generous character.

I also owe my sincere thanks to the Institute for Marketing as well as all the Executive Masters of Business Marketing of the Freie Universität Berlin. The great teamwork and cooperativeness among all colleagues has always produced a very pleasant, open and "feel good" atmosphere. In particular, I would like to thank Dr. Michael Ehret. As a mentor and friend he has supported me from the very beginning up to the point of my orals, offering valuable criticism and advice. The same applies to Dr. Stefan Wengler; it has always been a pleasure to work closely with someone so trustworthy and fair-minded.

My special thanks are extended to the other side of the globe below the equator, to the Department of Marketing of the University of Otago. Most of all, I have appreciated the open-door policy and the helpfulness at Otago. I deeply acknowledge the sympathy, the advice and the friendly support of the PhD coordinator Prof. Brendan Gray and the Director of Research Higher Degrees and Scholarships Dr. Charles Tustin as well as many other PhDs of the School of Business. The close bonds that have evolved during my time at Otago represent a great enrichment for me – far beyond the period of my PhD.

Furthermore, I would like to thank T-Systems International and the CSC Security in Stuttgart for enabling my empirical research. Primarily, I have received valuable support from my friend Tina Akbar, also from Rolf Binder, Bernhard Frei, Jörg Siebertz, and Wolfgang Piper. Their interest, their helpfulness and their professional expertise have been essential for the success of my work.

Last but definitely not least, I would like to express very special thanks to all those who have always believed that I would ever complete this work at all and who have made sure that I have managed the ups and downs during the time of my PhD successfully. Without doubt, I am indebted to my family – the Dabos, the Frauendorfs and the Schneiders; I thank them for their understanding and patience, the support of all my plans and the provision of so many opportunities. At the same time, I am truly grateful to my entire circle of friends who has always been there for me; during some phases of my PhD I would have simply been lost without them. Especially, I would like to thank Philipp Bohr, Julia von Dietman, and Sanam Moayedi who have greatly supported me by some means or other.

Janine Frauendorf

Table of Contents

List of figures

List of abbreviations

CBU	Customer Behavior Unit
CERT	Computer Emergency Response Team
CP	Customer Process
EDP	Electronic Data Processing
e.g.	example given
etc.	et cetera
eTTS	electronic Trouble Ticket System
i.e.	that is [id est]
IT	Information Technology
ITIL	IT Infrastructure Library
Mgmt.	Management
NSD	New Service Development
SLA	Service Level Agreement
SOM	Service Operations Management
SP	Service Provider
TCE	Transaction Cost Economics
TSI	T-Systems International

1 Introduction

1.1 Customer Processes in Service Transactions

In service transactions, customers inevitably form part of the production process even though they generally do not ask for being involved in it. The notion of customers as co-producers and contributors in a service process has long been acknowledged. Yet, little is actually known about the customer process itself.

The entirety of a service transaction can be considered as a tripartite configuration: there are the internal service activities of the service operator, the co-performing activities of the client, and the sphere of interaction through which both of them are linked. Based on that interaction the client's integration into the service provider's process is taking place. This structure applies to all services albeit a varying scope of each sphere depending on the considered service type.

In a consulting project, for instance, the scope of both the consulting company's as well as the client company's activities may be quite extensive: The provider dispatches consulting staff to the client company while various employees of the client company are expected to cooperate with them, deliver and grant them access to necessary information as well as other company resources. Exemplifying a classic business-to-consumer situation, when a customer uses a dry-cleaning service, the scope of activities of the client is rather limited whereas the dry cleaner performs most of the service production. Interaction between the two parties then takes place when the customer delivers and picks up the garment. Customer integration in that case relates to the piece of clothing that the client leaves behind as well as additional information concerning any kind of special requirements or arrangements the client might add. In contrast to that rather small scope of client participation, the example of an online-banking service illustrates a fairly great amount of customer activities: Here, the service production depends on the customer input to a high extent; the customer is required to enter every bit of information stepwise for the service to take place. Nevertheless, no matter what kind of service is considered, it always amounts to the following: Whereas the internal activities of the service company are mostly portrayed and scrutinized with some form of process chart such as a service blueprint, the customer side and its process structure remain undetected.

However, pursuing a marketing approach, a service transaction should be geared to aligning both process sides to each other in order to achieve an integrated process entirety. At the same time, the attempt to align, harmonize and coordinate these two processes causes transaction costs. Consequently, there is a need to identify a structure that helps to configure the customer process with the purpose of reducing transaction costs. On that, this work suggests an approach using service scripts. The service blueprint on the one hand can be used as a tool to record the provider's process activities. The service script on the other hand configures the customer's process image. Both tools grasp the complete service transaction process and the previous model of the service blueprint can be extended by the dimension of the customer process.

The customer service script, representing an implicit process description in the customer's mind, offers a possible explanation to the questions why and if customers know how to participate in a service transaction and why some clients in a service situation perform better than others. In most service transactions the service provider depends on the participation of the client. This participation, known as co-production – active and passive, depending on the service situation – refers to the mental, physical and emotional input that the client contributes in order to produce and/or to deliver the service (Risch and Schultz 2000). This input includes actions as well as resources in the form of individuals, objects, information, rights and/or nominal goods that, even though coming from the customer, are processed by the service provider and integrated in the service transaction (Lovelock 1983; Fließ and Kleinaltenkamp 2004).

It demonstrates that customer participation needs to be stressed in service production, delivery and design since the client affects the quality and the value-added of the service outcome. "The service system should be so designed that it is easy for the customer not only to take part in but also actively to contribute to the process" (Edvardsson 1997, p. 37). Consequently, it benefits the overall service production as well as the service operator when clients develop an ex-ante process notion of their position as a co-producer and know when, where and how to participate in the service process and what to contribute (e.g.Mills, Chase et al. 1983; Lovelock and Wright 2002). Such can be described with the term 'service script', defining "a coherent sequence of events… (and/or actions) …expected by the individual, involving him either as a participant or as an observer" of the situation (Abelson 1976, p. 33).

Service scripts help customers to achieve a better understanding and knowledge of the service production and delivery process. The benefits of the customer script are based on the assumption of customers as partial employees (Mills and Morris 1986): Customers' input and their co-production performance have a considerable impact on the service provider's productivity, the value-added (Barnard 1948; Lovelock and Young 1979) and the efficiency (Boyer, Hallowell et al. 2002; Xue and Harker 2002). Just as employees often use a service blueprint (Shostack 1984; Kingman-Brundage 1989) to memorize what the service process looks like and what actions they have to carry out during the service transaction, customers inherently use their service script instead. Hence, the service script can be regarded as the client's personal surrogate process map; it serves as a guiding pattern and gives implicit information how much participation the service situation necessitates and what actions are essential to perform.

The success of having the service process and the customer script optimally intertwined is vital for the service provider. Not only can it lead to higher customer satisfaction but it also forms the basis for a unique selling proposition (USP): That service provider will be selected whose process seems to match the customer's script best. In addition, once the service script of a specific provider is memorized, it makes it easier for the customer to interact with this particular one. Thus, in turn, it will lead to higher customer loyalty. Given that customer performance has such a high impact on the service process and that co-production may be affected by the client's script, the script should be given closer attention. This way, a more efficient and effective service process can be realized in which the customer receives a higher-quality service outcome and more added value.

So far, the concept of scripts has been researched in various areas of organizational contexts, often related to employee training and service evaluation in terms of expectations. The mid-eighties can be considered as the key 'period of prosperity' in script research concerning services; then for several years, script literature here was widely lost sight of and only few field work studies have been done ever since. Overall, literature from three major disciplines can be reviewed as to how they interpret and apply the phenomenon of scripts: psychology literature, services marketing and economic theories.

The psychological discipline represents the first and most fundamental literature because that is where the idea of scripts originates. It is mainly in clinical psychology that scripts are used to detect perception disorders of patients. Given that the latter are not able to describe the

course of everyday events, disorders in their process behaviour could be ascribed to distortions of their scripts (e.g. Grafman, Thompson et al. 1991; Rosen, Caplan et al. 2003). Expected process sequences for instance are then compared to patients' actual ones. Studies in this context have a very strong focus on empirical research.

Services literature as the second discipline can be grouped into different sub-tracks. One group is mainly concerned with the investigation of the existence and characteristics of scripts in consumer behavior; by comparing action sequences among subjects they also observe the homogeneity or alternatively the divergence of scripts (e.g. John and Whitney 1982; Bozinoff and Roth 1983; e.g. Hoy 1991) and explore role-related scripts (Parker and Ward 2000) as well as the role of scripts in consumer decision-making (Rethans and Taylor 1982; Hellier, Geursen et al. 2003). Smith & Houston (1985) come to the conclusion that the sequence of events in the consumer's memory, i.e. the script, must affect the performance in the service production process. Another group introduces the script concept as a measurement basis for service encounter evaluation and satisfaction (e.g. Storbacka, Strandvik et al. 1994). In some early experimental studies scripts are used to operationalize expectations (e.g. Hubbert, Sehorn et al. 1995) in order to develop benchmarks for the evaluation of service events (Smith and Houston 1983). Solomon et al. (1985) pioneer by pointing out the importance of congruent service providers and clients scripts for the service quality. This idea is incorporated in other works which examine the impact of harmonizing scripts on external and internal satisfaction, i.e. customer satisfaction with the service quality, as well as the employee satisfaction. (e.g. Bateson and Hoffmann 1999; Chung-Herrera, Goldschmidt et al. 2004). Again another group of services literature eventually applies scripts to employee training, establishing standard service encounter routines (e.g. Gioia and Poole 1984; e.g. Tansik and Smith 1991; Hubbert, Sehorn et al. 1995; Harris, Harris et al. 2003). According to their findings, scripts can also be used as a basis to evaluate staff performance and to generate prototypical organizational behavior.

A third stream of literature is based on economic theories with emphasis on transaction cost theory and embraces organizational process procedures and routines. The relevance of this field is based on the fact that it deals with uncertainties and tries to find measures for uncertainty reduction. Given that uncertainty is an important issue in service transactions determining the process behaviour of both actors with regard to the necessary coordination and monitoring, scripts in the form of institutions can be considered as a useful tool to

manage uncertainty (Powell 1987; Noteboom 1992; Egidi 1993; Noteboom 1996; Fließ 2001).

However, existing studies show insufficient concern for a comprehensive script analysis model giving attention to the customer side. Combining a blueprinting with a script approach offers a great opportunity to extend the internal process of a service-operator by integrating the customer side and thus reduce costs of coordination, i.e. transaction costs. The transaction cost theory (e.g. Commons 1931; Coase 1937; Williamson 1975) can be considered as the basic theoretical link between the process of both the service provider and the customer. It explains why these two have to be understood as one comprehensive process entity. Coordination costs do not only apply to intra-firm activities but also to inter-firm activities including the customer. For that reason, transaction costs affect both sides – the service provider and the customer (Williamson 1985; Williamson 1991). In this context, scripts offer a way of uncertainty reduction for both parties because they guide the process behavior and facilitate superior service process interaction. Scripts can therefore be considered as an instrument to reduce transaction costs.

The customer script can leverage the service production process in terms of efficiency, effectiveness as well as decreasing transaction costs and a general facilitation for both parties to perform the service. It is therefore in the service operator's interest that customers develop a script of the service transaction. In sum, the research problem being considered can be described as follows: So far, service processes are limited to the service provider's process side. The internal process of the service providing company can be structured in form of process tools such as a service blueprint but the equivalent of the customer process side is missing. The customer process in previous blueprint models is reduced to the line of interaction. In order to optimize the service transaction process comprehensively, facilitate high-quality customer integration and align both process sides to each other with the purpose of reducing transaction costs, it is necessary to explore the customer process. Such is approached by applying the theory of service scripts. As a consequence, the thesis addresses the questions if customers have a consolidated service script, what influential factors affect the script and if the service provider has an impact on the customer script.

Recapitulating the existing literature reveals that no attempts have been made to elaborate the script concept in the context of customer processes in service transactions. Some studies

implying that a script may benefit the customer's service perception and performance draw attention to the significance of the script topic and stress the necessity to pursue a deeper research argument (Hubbert, Sehorn et al. 1995; e.g. Bateson and Hoffmann 1999; Parker and Ward 2000; Bateson 2002). There is no precise approach to analyze the script structure including developmental factors thoroughly. Research lacks a concept of scripts with unambiguous reference to the customer service process and transaction cost theory. Concepts are missing that point out the importance for service providers to elicit script development and explore the conditions that have to be met for the client's script activation as well as resultant implications for service design. Consequently, vital research is needed in conceptual, in qualitative as well as in quantitative nature that can provide services literature and practice with fundamental and novel insights into the customer process because existing approaches show insufficiencies.

This thesis seeks to explore customer service scripts from a transaction cost based perspective. A conceptual framework for the analysis of customer service scripts is suggested which aims at identifying the fundamental influential factors and the conditions that need to be met for the customer script to develop. In order to improve co-production in terms of higher efficiency as well as effectiveness, focus is set on the process design as an instrument through which the service provider is assumed to be able to influence script development. In the end, the identified aspects of process design can then be used to create an integrated and comprehensive version of a service blueprint which incorporates the customer process side as an additional dimension. In order to test the theoretical framework in practice, an empirical study is carried out hosted by an ICT service company in a business-to-business environment. The relevance of this research is clearly not confined to the initial problem area regarding the analysis of scripts, the extension of the service blueprint as well as the transaction-cost perspective but corollary aspects may also be relevant for service innovations and service exports. Even though the research under discussion is carried out in a particular service industry and the thesis tends to set orientation towards business-to-business markets, the phenomena occur in a variety of exchange situations. The research theme can therefore be regarded as germane and original.

Two pathways of recent origin emphasize the topicality of this research stream: First, with regard to novel theoretical findings, the seminal work of Vargo and Lusch (2004; 2004) deserves to be given close attention. With services instead of goods dominating all economic

exchange, as the authors claim, the client's service process behavior, the view of a comprehensive process entirety of service transactions and the integration of customer processes into the service providers' processes gains even more importance. If service features are presumably found in products, as well, and separability between products and services is no longer given, product and service development must be geared towards the process all the more (Haase 2005). In a world of "servicization" (e.g. Thomas 1994; e.g. Laestadius and Pedersen 2005), the challenge of customer orientation, as postulated for decades now, demands for new resolution: The script approach focusing on the process aspect, as pursued in the thesis, offers a prospective way to accept the dare. By centering the customer process, this work deals with the problems accordingly and makes allowance for an integrated and universal marketing thought.

The second pathway refers to recent trends in business developments: Since the increase of the service industry becomes particularly evident in electronic services, script-related process design may be a useful way to face the specialties of online-environments. Novel service scenarios pose a challenge which scholars as well as practitioners need to rise to. Taking customer processes more into account and thus incorporating service scripts might be a helpful and promising technique to face this challenge. Consequently, these recent developments even enhance the necessity of focusing on customer processes and thus, to deepen and explore the topic of customer service scripts.

1.2 Outline of the thesis

The thesis is divided into two major sections: a theoretical and an empirical section. Whereas the theoretical section lays the foundation and provides the basis for the development of a conceptual framework model, the empirical section serves to test this model in practice. The basic structure of the thesis is illustrated in the figure below (Figure 1-1).

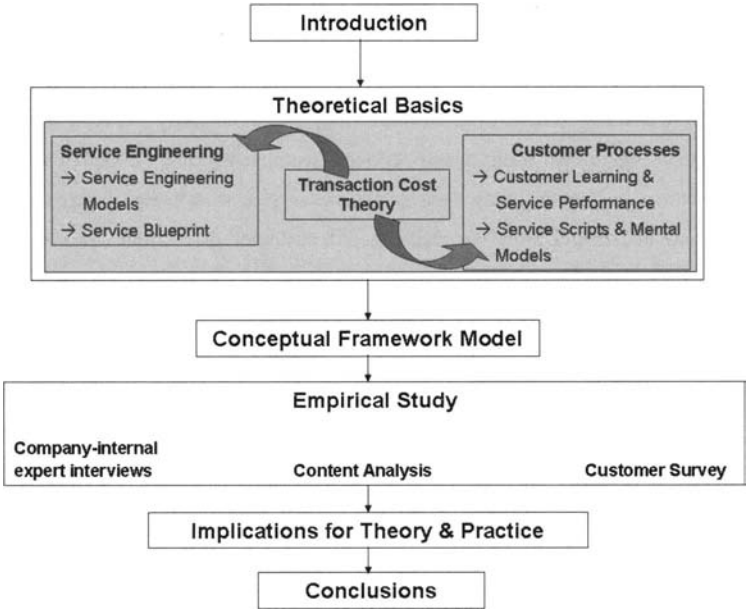

Figure 1-1: Structure of the thesis

After the introduction chapter which familiarizes the reader with the topic area and presents a short abstract of the research focus as well as the essential structure of the thesis, the second chapter commences. Delivering an extensive discussion on service engineering, this chapter basically attends to the provider's side of a service process. At first, a preliminary understanding of the service concept is specified, including the notions of customer integration and process apparentness. Based on that, the fundamentals of the subject of service engineering are discussed, portraying different service engineering models that aim at grasping service process activities and designing a service transaction. The main focus is then set on one particular model, the service blueprint which turns out to be most relevant for the research purpose of the thesis. Thus, the chapter goes into detail of the service blueprint. It gives a thorough overview and points out its imperfections in terms of a disregard of the customer process side because for the most part, the model still relates to the internal process procedures of the service operator.

Since customer processes represent the core theme of the thesis, the third chapter can be considered as the essential link between the service blueprint on the one hand, standing for the service provider process, and the customer process itself, on the other hand. This third chapter refers to transaction cost theory which incorporates both sides of the process. The theory therefore forms a source that both process sides can profit from and at the same time, the theory can be extended by integrating elements from both sides. In this context, transaction costs are highlighted in the service blueprint and service scripts are identified as institutions.

The theoretical part of the thesis then culminates in the fourth chapter, finally addressing the customer process as such. At first, the idea is to obtain a substantial understanding of the customer process in a service transaction. For that purpose, it is important to generally explain the function of service customers, their performance within the service as well as the efficiency of clients as co-producers. In order to comprehend the customer process and the structure behind it, the chapter then descends to customer learning and customer knowledge in a service transaction, adapting elements from cognitive psychology. Specifying the learning of service process procedures, service scripts represent the main focus of the chapter. Scripts as a procedural form of the cognitive construct of schemata are discussed comprehensively and particular attention is given to scripts in services. After looking into role theory and various other constructs that are assumed to be related to scripts, the argument continues with the construct of mental models. It will be shown why mental models are considered to be of particular significance for service process design with regard to customer processes.

The empirical part of the thesis starts with the fifth chapter which intends to produce a conceptual model. Based on the line of argument of the theoretical section, the key research aspects are to be clarified. The precise definition of the research problem and the explanation of the major research questions then lead to the research hypotheses. From there, the model framework is derived including the different concepts and their dimensions as well as interrelations.

The sixth chapter deals with the facets of methodology. In the beginning, the purpose of the study is explicated with reference to the framework model and the research aspects of the foregoing chapter. As an essential part of the methodology, the author reasons the chosen paradigm that the study is based on. Several other methodological characteristics, such as the study setting, the unit of analysis or the sampling design, are then described before addressing

the data collection method of triangulation that is applied in the research study. After that, the chapter deals with the operationalization of the model variables as well as with the goodness of the measures.

The analysis and the interpretation of the collected data is the subject matter of chapter seven. Following the method of triangulation as explained in the previous chapter, the analysis firstly refers to the investigation of documents and material within the company. Then, the key results from the expert interviews as well as the expert group discussion are inferred. The last part of this chapter is concerned with the survey results. After the goodness of the data is tested by way of different statistical tests, the editing as well as the preparation of the data is explained. Next follows a section which interprets the most significant descriptive data results; subsequently, the research hypotheses proposed in chapter five are tested and a few corollary data analysis results are depicted in addition. The chapter then ends with a brief synopsis summarizing the results of all three triangulated methods.

The eighths chapter covers the implications for theory as well as for practice. These implications are based the results of the foregoing chapter and the enhancement of further considerations in terms of theoretical and practical future trends. On the subject of theoretical implications, the discussion refers to transaction cost theory; it suggests a service typology which includes components of the script approach as well as transaction cost theory. The chapter then continues with possible prospects for the overall development of service engineering as well as consequences for service innovation and export. With respect to practical implications, ideas for future action in practice are contemplated that can be seen as consulting recommendations for the company hosting the research study as well as for service practitioners and marketers in general.

Ultimately, the thesis closes with the ninth chapter which draws a final conclusion. After providing the reader once again with an overall summary of the work, the chapter descends to limitations of the research and eventually points out opportunities for further research.

THEORETICAL BASIS

2 Service Engineering

In order to clarify the understanding of service engineering, the first chapter of the theoretical basis proceeds as follows: to begin, an integral conceptualization of services will be given. Then, customer integration and process apparentness will be highlighted as two essential service basics. To explain the concept of service engineering, an historical abstract of the term will be given, covering the different disciplines in which the term has been used. After the presentation of several service engineering models, the chapter will focus on the service blueprint model in particular.

2.1 Introductory theoretical basics of services

2.1.1 Intangibility

When talking about services, one characteristic always stands out: intangibility. Intangibility means that a service cannot be physically had at hand but instead is rendered and consumed in the course of an activity. Intangibility results from the fact that services do not consist of ingredients but of processes and, based on that, the simultaneity of service operator and client[1]. That is why services are defined as "deeds, processes, and performances" (Zeithaml and Bitner 1996, p. 5). However, following the recent argument of Vargo and Lusch (2004), no product is fully tangible nor are services completely intangible (Shostack 1977; Zeithaml and Bitner 1996): to a certain degree, every product transaction involves a service. A customer buying a table, for instance, engages the service of the shop assistant or the convenience of an online-ordering procedure in the form of the supplier's website. The same can be said about services (Vargo and Lusch 2004): there is no service that does not feature tangible elements. An airline company, for example, delivers meals and drinks during the flight. Thus, a service contains intangible process activities and physical side elements (Rushton and Carson 1989). Intangibility can be differentiated into palpable and mental intangibility. Palpable intangibility relates to physical intangibility, i.e. the service lacks a substantial material that is either visible or tactile, whereas mental intangibility refers to a more mental-intellectual aspect. Yet, palpable intangibility presumably represents the basis

[1] This simultaneity is also termed the "uno-actu-principle". It also refers to the fact that, unlike physical goods, services cannot be stored (Berekoven 1974; Parasuraman and Varadarajan 1988).

for mental intangibility (Bowen and Schneider 1985; Rushton and Carson 1989; McDougall and Snetsinger 1990).

Although, in the research literature, the phenomenon of intangibility is sometimes referred to as "immateriality"[2], this thesis deliberately uses the term "intangibility" and insists on a conceptual differentiation as follows: the two terms can be interpreted in relation to the object itself as well as to the user who perceives and engages the service. Whereas the phrase immateriality merely refers to the object, i.e. the service, intangibility comprises both aspects. A service may be immaterial when considered only from the perspective of the service itself; that is, it does not consist of physical or touchable components. However, from the user's perspective, the service signifies a certain utility to which is attributed a definite material value. In contrast, intangibility relates to both perspectives because the service itself, considered as an object, consists of intangible components just as the user perceives the service as intangible and non-concrete. This explanation highlights the fact that services actually feature a problem of perception –reference here to the two perspectives – and thus a problem of measurement costs. As a result of these problems, both parties are confronted with uncertainties. These uncertainties become even more complicated as contract and disposal of the service are arranged prior to the actual service production. The production and therefore the service itself can only be accomplished by the customer's cooperation during the production process. This simultaneity of production and consumption inherent in services is based on the generic concept of customer integration which will be discussed in detail in section 2.2.

Due to the intangibility of a service, customers have difficulty in evaluating a service before the purchase. In most cases services lack search qualities, i.e. features that can be evaluated ex ante. Thus, the client is only able to assess the service after he/she has experienced it; this means that services are dominated by experience qualities (Nelson 1970). However, sometimes the client is not even able to evaluate the service after the purchase, as often occurs in medical services. In that case, credence qualities prevail (Darby and Karni 1973). Consequently, intangibility results in fairly bad or even impossible comparableness of various services that the market offers (Liechty and Churchill 1979; Burton 1990; McDougall and Snetsinger 1990). Word-of-mouth communication, such as recommendations through friends

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[2] In the literature, different authors such as Shostack (1982), Rushton and Carson (1989), Stauss (1996) partly use a different terminology. Yet, both terms "intangibility" and "immateriality" relate to the same phenomenon, namely, the fact that something is not concrete.

or fellow customers, therefore provides an important substitute for the client (Langeard 1981; Crane and Clarke 1988; Freiden and Goldsmith 1989; Hilke 1989). Furthermore, when making the purchase decision, the customer tries to find surrogate indicators for the service quality such as, for example, the appearance of the business premises, the appearance and demeanor of the service staff (Engelhardt and Schwab 1982; Crane and Clarke 1988; Grund 1998) or the price (Liechty and Churchill 1979; Zeithaml 1981; Wiswede 1995). Intangibility often makes it difficult to demonstrate the quality of a service or even to develop a new one. It is therefore important to draw upon an integral service conceptualization that takes the entirety of service prerequisites into account and, at the same time, lives up to the intangible as well as the tangible elements of a service[3].

2.1.2 Components of a service production model

The elements of a service production model based on Kleinaltenkamp (1997) can be elucidated and additionally enriched with the similar approach of Edvardsson (1997). His model is primarily focussed on new service development, yet it delivers an appropriate conceptualization of services by identifying three service components: "service concept", "service system" and "service process". This trichotomy shows parallels to the model of service production according to Kleinaltenkamp (1997), who conveys the idea of service "potential", service "process" and the "outcome" as a product-service bundle (see also section 2.2). In this model, the service "potential" includes all internal resources and assets of the service provider as well as their prior combination[4]. In an attempt to confront the two conceptualizations, Edvardsson's concept may be found to be embedded in Kleinaltenkamp's more comprehensive understanding of service production: since the notion of the service provider's potential also comprises the prior combination of internal resource factors, the "service system" is only part of the potential. Kleinaltenkamp's model emanating from a production-theoretic view offers a fertile approach because it stresses the customer contribution and therefore forms an integrative value chain (Fließ and Kleinaltenkamp 2004).

A service concept stands for the idea of an offer that the service provider embraces. In describing the service for customers, employees and other stakeholders (Haksever, Render et al. 2000), it focuses on the notion behind the service in terms of what the client wants and

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[3] Gnoth (1994) offers a more detailed explanation of service quality with reference to an integral service conceptualization that he refers to as 'technology of service'.

[4] Aiming at a general definition of the term, "potential" as well as "potential activities" (a term which will be used in the context of the service blueprint in chapter section 2.5) comprise the management of the resources and the structure of the organization.

wishes and how this is to be achieved (Edvardsson 1997; Tseng, Qinhai et al. 1999). Whereas the service concept is intrinsically more relevant to the development of new services, the components of potential and process undoubtedly offer a useful approach to comprehending services in an integral way, embracing service product and process attributes (Pullmann and Moore 1999).

On the one hand, the potential is affected by the design of the service concept. On the other hand – and this is the more important aspect for this research – it represents a premise for the service process. The service process can only take place with the specific potential resources implicit in the set-up of the service system as a framework. Furthermore, the client needs to be familiar with the different elements of the service system he encounters in order to participate in the service process. Following Edvardsson (1997), the service system is described as the resource structure and categorized into various subsystems: the physical and technical resources, the service company's employees, as well as the organizational structure and control system[5]. Yet, differing from Edvardsson's view, the customers should here be considered simply as an indirect part of the potential, given that they are only part of it insofar as they engage with it in order to perform in the process. Hence, the client represents an external resource factor which is actually activated in the course of the service process performance. All elements of the service system can be differentiated by their external visibility, by the degree to which they form part of the service company's internal infrastructure and the degree to which they take place onstage, i.e. if they are visible for the client. For that reason, they can be related to different activity layers in the service blueprint (see section 2.5 in more detail).

The physical and technical resources of the service company include the equipment of the service company. On the other hand, the physical system is what the client engages with during the service transaction and therefore represents the technical environment of the service provider (Tseng, Qinhai et al. 1999). The ATM of a bank, for instance, represents the part of the service system that the customer has to deal with. For this reason, it is important that the service system be designed in a customer-adjusted way (Edvardsson 1997). Thus, physical and technical resources are found to be a vital part of the onstage activities because the client interacts with them. Yet, they are part of all internal service activities where

[5] A similar approach is given by Gnoth's (1994) 'technology of service' which can be applied not only to service innovation but also to other service process scenarios such as service recovery (e.g. Boshoff 1997).

employees use them to pursue service procedures, representing the service provider's potential.

Employees are the key resource of most service companies and are therefore a significant element of the service system. Generally, the service staff embodies the attitude and the quality promise of the company itself. Since the service employees chiefly interact with the clients, they are able to co-guide the client through the service transaction process and help the customer to deliver the right contribution. The service staff is therefore able to facilitate the client's participation in the service transaction (Edvardsson 1997). With regard to the employees' interaction with the client, they are essentially part of the onstage activities. At the same time, they are part of the organizational structure which indicates human resource planning as part of the preparation and facility activities. Besides, staff operate all physical and technical resources, and are therefore of high relevance for all service activities.

The third subsystem, the organizational structure and control, is mainly focussed on the internal organization of the service company, as the term suggests. It comprises the structure in terms of responsibilities and company divisions, as well as the administrative support system. Organizational structure and control are therefore mainly part of facility and preparation activities.

The customer, as pointed out earlier, is considered as the external resource[6] of the service company[7]. Given that the client's engagement in the service system is activated in the course of the process performance, he/she represents the connecting link between potential and process. Since the client takes part in the service production and finds himself in the role of a co-producer, the service system design needs to allow for this participation and make it as easy as possible. Regarding the client as a system resource also affects the marketing approach of the service operator, in matters like the design of invoices, customer telephone conversations and information objects. Not only has the client to be informed but the service provider has to train the client in the function of the co-producer. Customer outcome and customer process need to have the attention of the service operator (Edvardsson 1997).

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6 This line of argument can also be taken further when drawing on the resource-based view (e.g. Penrose 1959, Wernerfelt 1984, Barney 1991, Grant 1991, Peteraf 1993).

7 This aspect will recur in more detail in the context of the service blueprint (section 2.5).

The service process itself can be viewed as a series of activities taking place in a sequential and a parallel order and in interaction with the service client. "A process is any purposeful activity or group of activities that result in an outcome... [it] requires input such as human intelligence, information, machines, and materials" (Haksever, Render et al. 2000, p. 152) which may produce physical output, a service or a combination of both as a result. It can be defined by the way the client makes use of the service operation and deals with it (Kullven and Mattson 1994). The service process, i.e. the chain of activities, has to be activated by the client. Therefore, the prior installation of the potential, including the service system of the provider, forms the prerequisite for the customer process. For that reason, in a service blueprint all "potential activities"[8] are arranged chronologically preliminary to the actual "process activities" (see section 2.5).

The comprehensive service process can be divided into different components, namely the technical part, where activities are performed by machines or computers, the staff part, where activities are carried out by the staff (possibly supported by the technical process), and the customer process, i.e. those activities that are carried out by or with the help of the client (Edvardsson 1997). "The company ... does not have direct control over all parts of the process but must nevertheless be able to control the process in its entirety" (Edvardsson 1997, p. 38). This statement gives the reason why the customer process is of such importance and needs to be incorporated in the service process. That is, the service process has to correspond to various customer processes in order to control the process as a whole.

In the service process different parts of the service system are employed so that the service system supports the process. Whereas the service system - as part of the service provider's potential - is static and makes the crucial resources available, the service process is dynamic (Edvardsson 1997; Edvardsson 1998). The client, in the active role as a co-producer, needs to be familiar with the service system. Only then is he/she able to fulfil his/her tasks during the service process and to know how to participate and what to contribute to the process. A hotel guest, for instance, needs to know that there is a reception desk, i.e. part of the service system, and has to be acquainted at least vaguely with what it looks like so that he is able to check-in, i.e. fulfil the task in the service process. To elucidate potential (including the service system) and process in their context, it can be said that the former represents the basis for the latter but

[8] The term "potential activities" refers to all activities in a service blueprint that deal with the disposition of the firm's internal resources. Therefore, these activities are considered as customer-independent and as preliminary to all process activities, which are induced by the customer.

at the same time both these components of the service production model interact with each other and therefore need to be taken into account simultaneously.

2.2 Customer Integration

Customer Integration is a central characteristic of services which appears under different names. This finding can be traced back to early authors as for instance Engelhardt and Parsons. Engelhardt (1966) points to the customer's participation and indicates that customers have an influence on the seller's efficiency and effectiveness. Parsons (1970) dedicates an entire article to the phenomenon and also mentions the actual term "integration". In German-language research, "Integrativitaet"[9] was first raised in a seminal paper by Engelhardt, Kleinaltenkamp and Reckenfelderbaeumer (1992; 1993) who use the term to denote the customer's participation in the creation of value and output. In addition, several writers in organizational theory had even earlier brought up the idea of seeing clients as "partial employees" and pinpointed their contribution to the production process (Allport 1933; Barnard 1948; Parsons 1956; Lovelock and Young 1979; Mills and Morris 1986). Other terms like "servuction" (Eiglier and Langeard 1999), "co-production" (Sasser, Olsen et al. 1978; Groenroos 1990; Johnston 1994), "prosuming" (Toffler 1980) and joint production (Pullmann and Moore 1999) as well as "consumer participation" (Silpakit and Fisk 1985) tend to explain the same idea and one basic assumption underlies them all, namely, the production-theoretic view: it suggests that a service is produced by combining the internal resources of the service provider with resources of the customer (Figure 2-1), which are regarded as external production factors (Corsten 1985; Kleinaltenkamp 1997). Thus, the internal resources and assets along with the customer are considered as the service provider's potential.

[9] For a more detailed model concerning the three different spheres of property rights, factor combination and information that are affected by any market transaction, see Kleinaltenkamp and Plötner (2004), Kleinaltenkamp (2005)

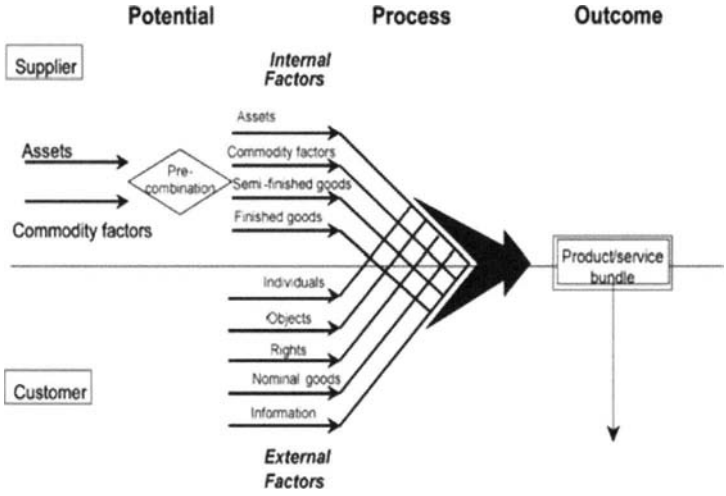

Figure 2-1: Service production (source: Fließ and Kleinaltenkamp 2004)

Customer Integration implies that either the clients themselves or any of their resources are included in the service operation. Without the integration of the customer, i.e. the integration of the external resource factor into the service operation, the service transaction is simply not possible – e.g. the mechanical engineering company cannot start to construct the plant without their customer's specified requirements and instructions. Accordingly, the external production factors[10] may be grouped into five categories (Engelhardt, Kleinaltenkamp et al. 1993):

- Human resources, i.e. individuals who can either be the customers themselves, e.g. a passenger who is entering an airplane, or an employee of the customer who, for example, takes part in a training session,
- Physical resources, i.e. physical objects like a vehicle that needs to be repaired or a patient's blood sample that has to be sent to the lab,
- Rights, i.e. the utilization of rights, for example the patient's agreement in form of a signature on a contract to have surgery done,

[10] The same meaning will be allocated to both terms external/internal (production) factors and external/internal (production) resources throughout the text.

- Nominal goods as for instance the customer's investment in bonds in order to increase interest and
- Information, which is probably the most prevalent one since every service transaction involves some kind of information transfer. A consulting customer, for example, needs to explain the company's problem to the consultant, a patient has to describe his symptoms to the physician and the guest in a restaurant must specify his order to the waiter.

The service provider's access to the external resource factor is limited to the time-period of the service transaction. All necessary external resources along with the internal resources are integrated in the service operation procedure during the course of the service process and finally result in the service outcome. Yet it is important that customer integration does not only occur in the service performance itself but that it can also take place in pre-transactional phases such as service development (Edvardsson 1997; Alam and Perry 2002). In this way, the customer can affect the service provider's potential, i.e. the internal resource factors as well; the involvement of customers in conceptualizing a new service idea may result in acquiring certain capacities to realize that service concept. Customer integration can therefore be differentiated by the stage of the customer's integration, depending on the point of the value chain at which the external resource factor is integrated into the service. Engelhardt, Kleinaltenkamp and Reckenfelderbaeumer (1993) label this type of differentiation with the term „Eingriffstiefe" which signifies the depth of the customer's interference. Besides, it is important to identify temporal aspects of customer integration, i.e. the length of time (Chase 1978; Engelhardt and Freiling 1995) and the frequency of the customer's participation, as well as the extent of the points of interaction in relation to the entire service transaction process (Engelhardt and Freiling 1995).

Other dimensions which define the level of customer integration are the degree of customization of the service offer and the degree of interaction. The degree of customization defines to what extent the service operation and the service output are individualized in relation to the customer. The degree of interaction refers to the amount and intensity of any kind of contact or interface between persons or media from the customer's as well as from the service operator's side (Engelhardt, Kleinaltenkamp et al. 1993).

The contact between the service provider and the customer is referred to as "service encounter" or "moment of truth". These service interactions may be considered from a stricter or a broader perspective: interactions can be restricted to personal contacts based, for example, on Solomon et al.'s (1985, p. 100) definition, which regards service encounters as "face-to-face interactions between a buyer and a seller in a service setting". Or, in a broader sense, it can include all contacts by the customer with another person or with tangible objects on the service company's premises. As seen from Shostack's (1985, p. 243) view, the service contact is "a period of time during which the consumer directly interacts with a service"; that embraces human-machine-, as well as machine-machine-interaction. Since customer processes are developed by persons and are geared towards interaction with another person or a machine, this research follows the broader definition, though excluding machine-machine-interactions.

A service transaction can be divided into single service episodes and the sum of all contacts can be defined as the customer path (Stauss 1995). Based on that differentiation, both the service interaction and the cognitive customer process can refer equally to an entire service transaction, a single episode or a particular contact unit. For instance, a service company dealing with the business supervision of firewalls may be considered as a complete service transaction that comprises various service episodes, such as implementing the service product, defining security guidelines with the customer company or logging-in into the customer data network via ping in the event of a possible or impending technical fault. Again, all those episodes consist of contact units, such as a particular confirmation with the customer contact employee or a new arrangement concerning the security guidelines. In every case, service transactions always imply some kind of interaction and, thereby, the customer's participation, that is, the integration of external resources.

Attention needs to be drawn to the various forms of resource integration that may occur, depending on the service scenario. As the following illustration (see Figure 2-2) shows, the integration of resource factors from both sides can take place within the supplier as well as within the customer company. Also, resource factors may be integrated within different time frames, i.e. on an enduring or on an episodic basis. As an additional option, the integration of resource factors can also appear to be of a virtual kind when both companies interact via electronic data transfer. These can partly be exemplified with the case used in the empirical part of the thesis. However, all scenarios show that, even though resource factor integration

can occur in different ways, it always requires both parties to participate. Furthermore, it is of crucial relevance to point out that external resource integration refers to all external resource factors, as explained earlier. This includes the customer company with actively participating individuals, who carry out certain actions within the service performance process, but also objects, such as equipment or gear that forms part of the customer activities, as well as customer information which is directly or indirectly incorporated in the service production process.

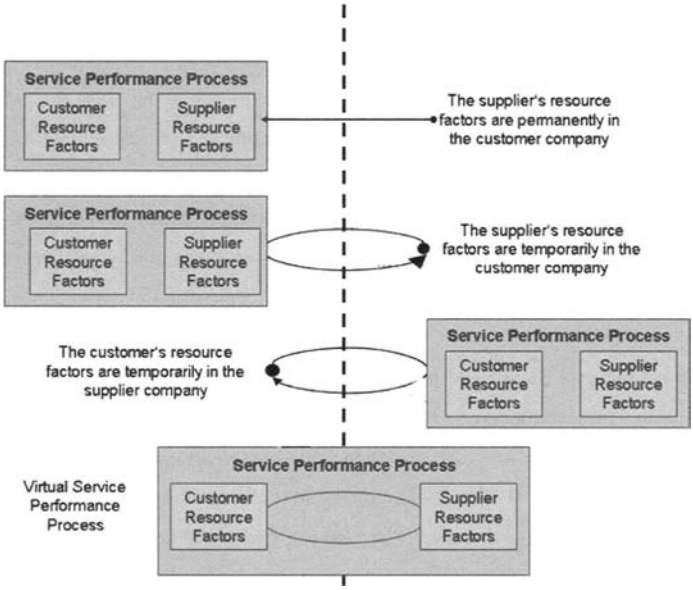

Figure 2-2: Forms of resource combination in supplier-customer service performance (in dependence on Jacob and Kleinaltenkamp, 2004)

2.2.1 Integration competence

As shown above, achieving customer integration throughout the service process is a crucial success driver for a company. For this reason, it is important to know what qualifies a service provider for the accomplishment of customer integration. The term "customer integration competence" was first used by Gouthier and Schmid (2001). Jacob and Guth (2002) try to

break down the construct into three dimensions called configuration competence, communication competence and control competence. Each of those sub-competences comprises a resource-, a qualification- and a task-fulfilment-dimension. They define it as follows: "Customer integration competence describes the ability of a company to integrate customers into the production process of customized goods and services. Customer integration competence refers to the material configuration of goods and services, to customer communication and to controlling for efficiency under result from a presence of appropriate organizational resources, the extent of an appropriate labor qualification and experience made in appropriately fulfilling corresponding tasks" (Jacob and Guth 2002, p. 565).

Configuration competence is needed in the sense that internal and external resources have to be combined to secure an unobstructed service process. In achieving this, the role and relevance of the external resources requires particular attention (Jacob and Guth 2002). It is not only important to combine these resources but, considering the fact that service transactions consist of processes, the key task is to align those processes with each other. To this extent, configuration competence involves the service operator's ability to align his own process structure with that of his customer.

The second sub-competence focusses on the communicational aspect. It deals with the service operator's ability to gain information from the customer about the problem which he needs to have solved. This information has to be communicated internally, i.e. within the service company. The communicational aspect also refers to the capability to promote process transparency (see section 2.3) for the client, but also for the service provider and the contact employees. Additionally, communication competence relates to the social interaction with the customer and also within the service firm. The customer needs to be motivated to contribute his resources as input factors for the service transaction.

Control competence, as the third dimension, deals with the efficiency aspect of the service process. Given that the customer takes over the role of the co-producer and therefore has a rather high influence on the process efficiency, the service provider is not autonomous. For that reason, a special competence is needed to secure an efficient process. The process requires an accurate documentation, as well as a detailed analysis procedure recording seizes like total-process-time or activity-time for instance (Fließ 2001; Jacob and Guth 2002). As

can be concluded from the three dimensions, customer integration competence requires a complete involvement in and comprehensive analysis of the customer process.

2.2.2 Consequences for transaction cost theory

The service operator's endeavor to integrate his customer successfully into the service process is aiming at two aspects: first, it is to create process apparentness and to make the process easier for the customer as well as for the service company itself. Second, resulting simultaneously from the previous aspect, customer integration helps to save transaction costs. Due to the clients' influence on the transaction process, customer integration consequently increases productivity and effectiveness[11].

Customer integration and process apparentness (see also section 2.3) are interdependent paradigms. The service operator needs to define clearly those process points where interaction with the customer occurs. That, in turn, is only possible if the process is apparent enough for the service provider himself, as well as for the customer. If the process is apparent to both the service operator and the client, they both know where, when and how the integration has to take place.

Integrating the customer into the service process requires a lot of coordination which again causes transaction costs. Transaction costs, as based on a general economic approach following Coase (1988) and Williamson (1975), evolve from the need to coordinate economic activities. They are the only costs that apply to the provider as well as to the client. In the context of the customer integration process, every procurement of an external resource can be seen as a transaction. Yet here, in contrast to miscellaneous procurement activities of input resources, all input resources, i.e. the external resources, are provided by the same "contractor", to wit the customer. In order to carry out customer integration activities, several types of costs (Mellerowicz 1957) can be differentiated (Fließ 2001):

1) The costs of procuring external resources: these costs predominantly arise from negotiations with the client regarding the provision of the external resources. In addition, it must be ascertained that those external resources are available at the correct time, at the correct place, in the correct quantity and quality.

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[11] With their Governance Value Analysis model, Ghosh and John (1999) show options for the analysis of transaction costs to increase effectiveness and design a marketing strategy.

2) The costs of realizing the combination of the resources: by this, the resource combination takes place within the process, when combining the service provider's internal resources with the external resources from the customer, as well as within the service provider's potential. Although in this second case, which mainly involves the combination of internal resources, the costs arise from the consumption of resources.
3) The costs of performing dispositional activities: again, these costs relate to internal and external resources which have to be implemented within the service provider's potential as well as within the process. Costs are caused by the coordination of internal activities, for example the coordination between different departments and units of the service company.

On the other hand, the microeconomic theory offers a more precise and more summarizing way of differentiating costs in customer integration processes: it distinguishes production and transaction costs. Accordingly, resource consumption that relates to the combination of resources is considered under production costs. Those costs that are caused by the procurement of external resources and by the internal coordination activities are regarded as transaction costs (Picot 1982; Fließ 2001).

If the consumption of resources and the sequence of activities could be accurately determined ex ante, there would be no difficulty for customer integration processes. But, since several of the required resources are in the client's possession and the service operator is not producing the service autonomously, the need for coordination activities evolves independently. The service production process is not clearly determined because it is affected by the interaction between the service operator and the client. Therefore, the customer integration process cannot be included under production costs. The co-production of service operator and client causes transaction costs for both sides. In order for the client to deliver his resources at the correct time, to the correct place in the required quantity and quality, he too has to perform coordinating activities. For this reason, it is important that the process structure is apparent to both parties (see section 2.3). Since transaction costs apply to both sides, they can be considered in sum for the entire service transaction process. Service provider and service client are aiming at reducing transaction costs as much as possible by avoiding needless activities of communication and adjustment, i.e. keeping down the number of coordination activities (Fließ 2001). From the service provider's point of view, this aim can be realized if it is known what the customer's implicit process structure looks like and what his/her

expectations are regarding the co-production role. From the client's perspective, it can be said that once the consumer has learned a structure for the process, i.e. knows what to do and to deliver at what time-stage of the process, then costs of monitoring, adjusting and negotiating, as well costs of executing the exchanges of a transaction can be reduced (see also Bowen and Jones 1986).

2.3 Process apparentness

In every service process the client represents a source of uncertainty: customers themselves and their resources have to be integrated in the service provider's process, with the consequence that this part of service production is beyond the service provider's control (Larsson and Bowen 1989; Fließ 2001). Acknowledging the customer as a co-producer of the service, this uncertainty risk needs to be preferably reduced. That means that the participation and responsibility of the client in the service transaction must be made comprehensible and apparent (Edvardsson 1998) to secure an unobstructed service process. It is therefore important for the service provider to know, firstly, what actually provokes that uncertainty and, secondly, how he can avoid it.

Uncertainty can evolve if either the customer or the service provider is uncertain about the course of the service process and the actions which the service process requires. The service process has to be apparent to both service provider and client, i.e. 'process apparentness' should exist on both sides. Fließ (1996) denotes it with 'Prozessevidenz' and breaks it down into three subcategories: problem apparentness ("Problemevidenz'), resource apparentness ('Faktorevidenz') and integration apparentness ('Integrationsevidenz'). Each of those constructs comprises a dimension of awareness and transparency, i.e. an in-depth process understanding and can be found on either side, that is, on the service provider's as well as on the customer's side.

Problem awareness describes the customer's knowledge about his problem and also refers to the match between the customer's expectations and the service capabilities (Mills and Morris 1986). Problem transparentness implies the customer's ability to specify the problem to the service provider. Resource apparentness indicates first that the customer is aware that he actually has to contribute certain resources or himself to the service production, second he knows exactly which resources to deliver (Brass 1985). An airline passenger, for instance, has

to know that he needs to show his passport to travel abroad and he also needs to know that he physically has to enter the airplane to consume the flight. Integration awareness occurs when the customer knows that he or his resources need to be integrated effectively into the service production process. It is important for the customer to understand the relevance of his participation for the quality of the output. Integration transparency involves the knowledge of when, where and how to contribute the resources to the process (Slocum and Sims 1980; Larsson and Bowen 1989), one of the major goals in service process management (Palmer and Cole 1995). Using the earlier example, not only must the airline passenger be familiar with showing his passport but he must also know that he needs to show it at the check-in counter in combination with his airline ticket. Integration apparentness also includes the customer's overall willingness to participate in service production. As suggested earlier, a lack of process apparentness can also apply to the service provider side; he, for instance, may be unsure about which resources he has to demand from the customer, when he has to demand them and how these resources have to be integrated into the process to achieve the best performance (Fließ 1996).

In the first place, it is the service providers' job to provide process apparentness for themselves. Service engineering models, like the blueprint for example, offer an appropriate tool to generate the necessary transparency (Fließ 2001). On the other hand the service provider must create process apparentness for the customer in order to have the customer well integrated into the process and to ensure an effective, as well as an efficient service transaction. For this purpose the customers' activities and the role (see chapter 4) which they have to fulfil throughout the service process have to be defined and specified (Mills and Morris 1986). The blueprinting concept, used to provide process apparentness for the service provider, seems to be insufficient because it focusses on the process activities from the service provider's perspective.

Since the customer strongly affects the effectiveness and efficiency of service production, the customer's degree of participation has an impact on the quality of the output as well as on the supplier's cost increase (Kleinaltenkamp 1999). It is therefore the customer's process, or, better, the customer's script (see chapter 4) that has to be included into the blueprinting analysis in order to provide process apparentness spanning the entire customer integration. For the most part, the construct of integration transparency involves the analysis and the coordination of those scripts. The lack of integration transparency is frequently attributed to

the different scripts of the service provider and the customer. Either party, or, better, the agents of either party, then possess unequal ideas and expectations regarding the participation of the customer (Bateson 1985; Fließ 2001). Being aware of the different scripts with which the customer enters the service situation enables the supplier to provide better process transparency.

2.4 The concept of service engineering

The etymology of the word "engineering" derives from the latin word "ingeniosus" meaning skilled, ingenious or expert; whereas in the Arabic language engineering simply signifies geometry (Britannica 2004). Hence, service engineering can be understood as the skill and expertise of constructing a service based on a rather technical origin. Engineering methods and tools that were originally developed to handle technical problems are now being applied to the development and management of services (Eversheim, Kuster et al. 2003). Since a service can be considered as a socio-technical system, its complex process structure makes great demands on the planning and construction. Multifaceted links between the service components of people, technology and organization have to be taken into account and their respective requirements need to be met (Shostack 1984; Bullinger and Meiren 2001; Eversheim, Kuster et al. 2003).

Along the same lines as product and even software development, there is a need for services to be developed in a systematic and methodical way. Services require a developmental discipline in the same way as a production process calls for an object list of material or an indication of ingredients. The concept of "Service Engineering" therefore represents the modus operandi, methods and tools for the systematic planning, development and realization of service innovations, as well as the optimization and managing of service processes (Bullinger and Scheer 2003). Since services are based on process structures, service engineering can also be equated with process engineering (Edvardsson 1997; Kleinaltenkamp 1999).

Service Engineering can be considered as a cross-sectional and interdisciplinary approach. In the broader sense, it covers ideas from engineering and managerial sciences but also from computer information science and psychology. Computer information science may be seen as a part of engineering, for example information engineering or software/systems engineering;

many fields in managerial science, like marketing for instance, comprise psychology as a sub-discipline. Therefore managerial and engineering studies deliver the main foundations for the discipline of service engineering (Faehnrich and Opitz 2003). The use of standardised process models and constructional methodologies adopted from engineering aims at helping cost reduction, faster market launches and quality improvement (Bullinger and Schreiner 2003; Eversheim, Kuster et al. 2003). Managerial concepts, particularly from controlling and marketing assist in identifying business models, adhering to the scheduled costs and monitoring the developmental progress (Schwengels 2003). From the marketing perspective customer needs are prioritised and the perception of quality is analyzed (Benkenstein and Holtz 2003). Since service transactions are characterized by personal interaction, it is important to include psychological aspects into the design of the customer interface and the planning of the interaction between customer and contact-employee (Nerdinger 1994). Computer information science is used to support and coordinate the developmental process of services and to implement service solutions (Herrmann, Klein et al. 2003).

Three major research groups can be identified in approaching services: an evaluative, a constructivist and a theory-building approach. The evaluative approach analyzes services mainly with empirical methods; service issues are observed and described in order to evaluate them. This approach is based on methods like field work, benchmarking or customer satisfaction analysis and dominates the anglophone literature. According to the constructivist approach, services are always 'designable' or 'constructable'; they are not developed by chance but are subject to a systematic and methodical procedure. The third approach focussing on theory-building is somewhat more abstract; formal sciences like mathematics, computer information science and operations research are used to develop for example algorithms and simulation programs. These three approaches are not to be considered as excluding each other; rather, they can be combined and result in an integrated perspective towards services (Faehnrich and Opitz 2003).

Service engineering can be best grouped into the interface of the constructivist and the theory-building approach. On the one hand, the discipline generally pursues the paradigm of systematic and methodical service production; on the other hand, this research particularly aims at developing customer process heuristics as a basis for better customer participation. For this reason, the research also has to be geared to algorithms and ways of simulating customer processes in order to facilitate the customer's contribution to the service production

process. In that context and for the research purpose of this thesis in particular, attention shall especially be drawn to the double meaning of the word "engineer": in English it can also imply manipulation. It is that connotation that fleshes out the argument as follows: by engineering the process design, service providers not only aim at constructing the process for the service company's internal procedures and actions - they also seek to impact and manipulate the customer process. To fully comprehend the idea of service engineering, an historical abstract shall be given next.

2.4.1 Historical abstract

The term "service engineering" was first used by Shostack (1982) in the early eighties. However, the author was mainly referring to the marketing side of services. Later on, the term was used again in the context of a systematic service planning but it still lacked a firm set of principles or procedures. Since service engineering was considered as a fairly new science or even an emerging art, there was no concrete definition for it (Albrecht and Zemke 1987). Afterwards the use of the term "service engineering" disappeared from the Anglo-Saxon literature and has been revived by the predominantly German literature since the nineties (Faehnrich 1999; Faehnrich and Opitz 2003).

In the Anglo-Saxon literature two research streams called "new service development" (NSD) and "service operations management" have evolved (see thereto chapter 2.4.2 and 2.4.3). New service development, as the term indicates, predominantly deals with the development of new and innovative services but also with further-development and optimization of existing services. Whereas service operations management, as the phrase foretells, "is concerned with the task of managing the process (or system) for the production of goods and services from the input resources which usually include labour, plant and machinery, materials and information" (Johnston 1994, p. 49). Both, service engineering and service operations management derive from a production-theoretic view, whereas the theoretical basis in the NSD literature has a wider-spread range. Since innovative services can only succeed with a proper process management and managing service operations requires an elaborate development process, those disciplines overlap. They both, or better all three involve a systematic procedure of developing, optimizing and managing processes in a partly standardized, goal-oriented and traceable way (Eversheim, Kuster et al. 2003). A more detailed differentiation will also be given in sections 2.4.2 and 2.4.3.

In the past two decades those works that claim to take a customer viewpoint have focused on analyzing service quality problems, like waiting time, and customer satisfaction studies. That research can be grouped into a marketing-oriented perspective on the one hand (Lovelock 1983; Zeithaml, Parasuraman et al. 1985; Meffert and Bruhn 2000; Parasuraman 2004). On the other hand, there are studies with a stronger service-engineering tendency and therefore a more production-theoretic perspective: Those (Shostack 1984; Albrecht and Zemke 1987; de Brentani 1995; DIN 1998; Cooper and Edgett 1999; Johnson, Menor et al. 2000), even though they consider the customer's participation in the service production, ignore that it is the service provider's job to facilitate this participation and make it as easy as possible for the customer. That means, the models they deliver include the customer process only in so far as they identify the interaction with the customer from the service provider's perspective. But those models do not show any endeavour to align the service process with the process of the customer.

Features	NSD	**Service Engineering**	SOM
Origin:	Product Innovation	Interdisciplinary Approach: • Engineering • Managerial Sciences • Computer Information Science • Psychology	Product Management
Basis:	Marketing-oriented perspective	Production-theoretic view	
Definition:	Systematic development & design of services comprising the entire lifecycle of a service product (from the initial idea to the implementation and the phasing-out/replacement of a service)	Service process construction including all internal and external (customer-related) procedures and activities: Design process of the service & the resultant management of the process structure	Service activity coordination (bringing the process activities into agreement with each other): Process design, layout, production planning & quality management
Key Concepts:	1) Service creation 2) Service engineering 3) Service management or implementation	Basic pattern of how services proceed, structuring of services and what activities are carried out by whom	Transfer from manufacturing techniques into service production

Figure 2-3: The Discipline of Service Engineering

As stated above, research in new service development and service operations management, as well as in service engineering may be considered as closely related and overlapping for the

most part (see Figure 2-3). Thus, the following two sections will also contribute to more information on the development of the discipline.

2.4.2 New Service Development (NSD)

New Service Development can be understood as a systematic development and design of services by applying appropriate tools and methods. Here, ideas from product innovation are applied on services (Easingwood 1986). Comparing it with service engineering shows that those two terms may be used in the same sense but taking a stricter point of view service engineering may be considered as a part of NSD: In a broader sense, NSD includes the entire lifecycle of a service product from the initial idea to the implementation and even the phasing-out or replacement of a service. Whereas service engineering rather represents the design process of the service (DIN 1998) and the resultant management of the process structure. The term NSD comprises not only the development of service novelties but also modifications of already existing services. NSD aims at attracting new customers and developing new businesses, as well as demonstrating excellence and progressiveness in order to maintain existing customers (Berry 1982; de Brentani 1989; Ulwick 2002).

NSD concepts are heavily geared to the service product lifecycle; i.e. the different phases in a service lifecycle require different approaches and focus on specific task steps. Several key steps can be identified from most NSD approaches: 1) service creation, 2) service engineering and 3) service management or implementation. The service creation phase deals with screening and evaluating various ideas for service novelties or innovative service modifications. Design and service specifications are defined in the service engineering phase. The service management phase covers the actual business performance, the realization and operation of the service (Koenig 1998). Other authors find it more suitable to split these three steps into sub-phases. The third phase for instance, service management, may be subdivided into a separate testing and an introduction phase (Scheuing and Johnson 1989). Nevertheless, most authors still stick to the basic course just varying in the number of developmental phases they define and the terminology they use (Reckenfelderbaeumer and Busse 2003).

Johne and Storey (1998) also comply with those three phases explained above even though they name them differently. However, they additionally identify three more key themes in new service development: the corporate environment, the process itself and the people

involved. Those three themes can be considered as the basic prerequisites for the actual developmental phases to take place. In order to generate creative ideas for service innovations, the framework conditions have to be met first. Such a framework is made by the corporate environment, the process and the people.

The corporate environment needs to provide an organisational culture that boosts and encourages innovative ideas. On the one hand, an NSD programme with defined goals must be set; on the other hand it is important to avert excessive bureaucracy in the organisation because it constricts creativity. The organisation requires an infrastructure that supports innovation and communication (Martin and Horne 1993; Edvardsson, Haglund et al. 1995).

What Johne and Storey (1998) have identified as characteristics of the theme "process" deals with the overall-organization of the NSD process itself: In order to shorten the duration of the entire developmental process, i.e. from the initial idea to the service implementation, it is important to gear to a NSD model at all. Only if the service provider has certain steps defined of how innovative ideas can be generated and eventually realized, then the steps can actually be carried out (Bowers 1989).

'People' are surely a very important issue in NSD; hereby, different groups of people need to be mentioned. First of all, the management staff is crucial for successful service innovation. In this sense, the management is again part of the corporate environment. They need to create the organizational framework and structure for an innovative atmosphere in the organization and have to encourage innovative thinking and acting (Thwaites 1992). Thus, the other groups of people consist of the actual development staff, the customer contact staff and the clients. If there is no official development team in the organization, no-one really feels responsible to be in charge for innovations. So again, the creation of the job profile of development staff is subject to the organizational environment. The customer-contact staff acts as a "supplier" for the development staff; they obtain the most important information from the clients. It is such information that can then be transformed into innovative service offers (Schneider and Bowen 1984; Langeard, Reffait et al. 1986; Martin and Horne 1993).

Finally, the vital group of people to develop new services are the customers (Schneider and Bowen 1984; Martin and Horne 1993). They are the ones who initiate or stimulate new ideas and they are the ones who have to be taken into account when the service is designed. Most

approaches in NSD allow for the customer's significance as an information source. Simultaneously, they enhance the importance of the contact-employees because they gather the customer's wants and needs. Yet, when designing the service process, NSD concepts do not follow the fact enough that the customer has a process structure of his own when consuming a service. That means the service process structure designed by the service company has to be aligned with the customer's process structure.

2.4.3 Service operations management

The service operations management discipline evolved out of production management. In the early seventies production approaches were first applied to services (Levitt 1972). As services became more and more important for the economic growth, literature and terminology developed in favour of services as well. Thus, the term 'production' or 'manufacturing management' was increasingly superseded by "operations management", implying the production management of both goods and services.

As Johnston (1994) stresses in his historical summary, the first milestone in literature focussing explicitly on service operations management appeared in the late seventies by Sasser et al. (Sasser, Olsen et al. 1978), followed by Fitzsimmons and Sullivan several years later (Fitzsimmons and Sullivan 1982). These authors contributed to an entirely new perspective and identification of services and service characteristics. Besides, techniques and theories from operations management were now adopted from service operations and the discipline was influenced by marketing approaches, as well. Whereas services marketing and management literature is criticised for disregarding the results from an operations management perspective. Johnston (1994), for instance, finds fault that literature deriving from services marketing tends to ignore the production-theoretic view from service operations management.

Service operations management aims at an efficient and effective design and operation of systems in order to provide services to the client and co-produce them with the customer. The most distinctive characteristic of this research stream is its production-theoretic view and, resulting from that, the transfer and adoption of concepts and techniques from manufacturing approaches unto service production. It may be considered as an interface discipline holding a central function in the service company. The discipline covers themes as for instance process

design, layout, production planning and quality management (Johnston 1994). It is concerned with those activities that are responsible for producing the service and delivering it to the customer respectively (Schroeder 1989). Since producing and delivering of the service is performed simultaneously and – to a major or minor part – always involves the client, it has to be considered as inseparable from each other. Service operations management is therefore in charge of bringing the process activities into agreement with each other. That means, on the one hand the process activities within the service company, i.e. those of the service provider have to be adjusted to each other; on the other hand it is important that the service provider's activities have to be aligned with the customer's side, as well.

Defining services as "customer-processing operations" shows the strong customer relevance in service operations management (Silvestro, Fitzgerald et al. 1992). Yet, traditional service operations management approaches still disregard the adjustment to the customer process activities. Although service operations management recognizes the client's role as a service co-producer, adequate importance is not attached to the customer side of the service process. Tseng et al., for example, criticize that "service operations have so far not been adequately studied through a systematic portrayal of the entire service experience of customers in accordance with the customer's activities" (Tseng, Qinhai et al. 1999, p. 53) and therefore posit that "managerial actions should be taken from customers' view points" (Tseng, Qinhai et al. 1999, p. 54).

Even though the conventional blueprinting technique, for instance, allows for customer interaction by portraying the 'onstage' activities on the 'line of interaction' (see thereto section 2.5), it merely pinpoints the very 'moments of truth' (Carlzon 1987; Stauss 1991). Here, the accentuation is still set on the service provider's side, i.e. those activities that represent the service provider's interaction with the customer – more than vice versa. Several authors (Kullven and Mattson 1994; Johnson and Mathews 1997; Tseng, Qinhai et al. 1999; Orsingher and Marzocchi 2003) try to compensate for these deficits by drawing on the study of customer experience (see thereto also chapter 4) and service expectations. While these ideas approach the problem in a prolific way, it can be claimed that service experience, for instance, is only one aspect that affects the customer performing the co-producing activities during the service transaction. Service experience does not focus on the single activities the client needs to carry out but rather mediates an overall experience or perception of the service. It therefore implies some kind of customer judgement concerning the service quality.

Nevertheless those approaches are heading for the direction of making service operations management more customer-process oriented. Thus, they seek to find a describable structure of the customer process in form of the customer experience and aim at modelling it. They imply that modelling any construct like service experience is the first step to understand and analyze it and eventually take improving steps towards it (Tseng, Qinhai et al. 1999).

2.4.4 Service engineering models

Service engineering models represent a basic pattern of how services proceed, how they are structured and what activities are carried out by whom. Therefore they can be drawn from both disciplines NSD and service operations management. The use of service engineering models compared to the development and manufacturing of goods is still rather undersized. But total quality management (TQM) calls for the adoption of process design techniques to secure a systematic, organized procedure of services and quality standards. It is of particularly high relevance for service design and delivery that customers are incorporated in all elements of the service and throughout the service process (Brown, Fisk et al. 1994). Reviewing models from both NSD and service operations management, this chapter aims at having a look at the most prevalent service engineering models. Since a detailed overview on all existing models would be too extensive, those models shall be picked out as a central theme that show attempts to include the customer process into the overall service process of the service provider. The blueprint as the fundamental model of this thesis will be addressed in a special section (see section 2.5). Most models are based on flow-chart modules and event-process chains. Within this immense scope of models, a large number reveals a very strong influence of information systems and shall therefore not be part of this work.

The range of NSD models, for instance, can be approximately differentiated into three groups: linear procedure or phase models, iterative procedure models and prototyping models (Bullinger and Meiren 2001). Linear phase models are based on the sequence of steps that have to be realized in order to develop a service. Those steps are geared to the different development stages as described earlier. The procedure is linear because a phase can only start after the preceding one is completed. Such a precise classification in predefined partial stages results in a highly transparent procedure (Schneider and Wagner 2003). Thus, the service as a final product is realized in a gradual manner. Linear phase models however are quite inflexible: ex post adjustments due to altered conditions cannot be made because it is

not possible to subsequently go back into foregoing phases (Seibt 2001). In contrast, iterative procedure models facilitate ex post modifications by returning into previous phases and restarting the following phase. Prototyping models develop an ex ante version of the planned service where service attributes and functions can be tested beforehand. Hereby, the phases do not have to be carried out sequentially but may overlap (Stahlknecht and Hasenkamp 2002).

A widespread NSD model that can be grouped into the linear procedure models is presented by Ramaswamy (1996). He differentiates between the service design phase and the service management phase: The design phase is to conceptualize the new service and forwards input data, i.e. design instructions to the service management phase. During the service management phase suggestions for redesigning the service can be made. Each of those two phases comprise four sequentially arranged sub-phases. Determining the design attributes implies the prioritization of the customers' needs and expectations. The model tries to identify service attributes as design characteristics that can each be assigned to defined performance levels (Schneider and Wagner 2003). Following other works those service attributes can again be classified into technical and interpersonal process attributes (Chen and Ting 2002); however, the configuration of service attributes and their allocation to certain levels is partly comparable to a conjoint analysis and also adapts some basics from the House of Quality (see thereto Hauser and Clausing 1995). Through his flow-chart model Ramaswamy (1996) succeeds in a rather comprehensible yet detailed concept for new service design: the customers' expectations of a service are translated into quantitatively measurable design attributes. The service can therefore be designed by sequentially checking if all attributes correspond to the respective performance level. Nonetheless, the customer's role as a co-producer is only taken into account in so far that the model centres the customers' expectations in terms of the service quality and the outcome of the service performance. Even though the customers' wants are integrated into the service attributes and so the model tries to consider the customers' expectations, it still disregards the customer's role as a participant during the service process. The model does not shed light on how the process activities themselves have to be designed to facilitate the customer's participation and what the customer process is like in the course of the service transaction.

Kullven and Mattson (1994), when pursuing a management control system for services, focus on the customer's interaction with the service operations. In order to model this interaction, mostly between customer and service employee, they simply use mapping techniques.

Although the term 'customer process' is used, it is merely considered from the service provider's point of view: The main focus of the model consists of the classification of the service provider's activities into different levels depending on their degree of interaction with the customer. In this respect, there is not much novelty compared to the various lines and levels of the traditional blueprinting method (see section 2.5).

Other models, like the service transaction analysis (STA) and the structured analysis and design technique (SADT) explicitly focus on describing a service and claim to take a customer's perspective towards it. As Congram and Epelman (1995, p. 6) couch it "A good service description is invaluable, whether we wish to improve an existing service or design a new one, train a new employee or cross-train a veteran, develop standard operating procedures or identify ways to customize our service." The STA provides managers with a model to systematically analyze the service process from a customer's viewpoint. The dimensions chosen in the description approach are partly geared to the "service-concept-/ service-process-conception" by Edvardsson (1997) (see thereto section 2.1.2). As a basis of a walk-through audit the STA represents an uncomplicated model to gauge and improve the customer's experience of a service process. The advantage of the STA is that it includes the physical, tangible issues of the service, as well as service scripts (Johnston 1999). Yet if anything, the service scripts concern employees and managers themselves, thus the service provider. Besides, the overall description seems tightly focused on the outcome of the service, the quality result of each activity or process step. Therefore, the participation of the customer during the process is rather a minor center of attention.

SADT is a service engineering model that consists of a set of interconnected diagrams in order to describe the complexity of the service transaction. The key components of the SADT are represented by the service activities. In describing those activities SADT is focussed on four major activity dimensions: 1) the mechanism, i.e. who or what performs the service, 2) the control, i.e. through what is the service limited or guided, 3) the input, for instance files or data from the customer and 4) the output of the service activity. Due to a high number of arrows the model appears to be fairly complex. Besides, it is not necessarily directed to customer-server interaction activity flows and thus, there is not sufficient focus on the customer perspective. But most of all, it can be criticized to be more appropriate for describing information flow modelling,i.e. in information management, rather than process flow modelling (Kim and Kim 2001).

The IDEF3-technique strives for scrutinizing the customer experience and maps a process flow description diagram. Here, the customer represents the key element of the process description: First, the map focuses on customer behaviour units (CBUs) that show the customer's participation in the service operations system. Second, the model tries to portray the customer contact object by means of attributes and the characterizing relationships (Tseng, Qinhai et al. 1999). The model results in questioning if there are some CBUs or customer contact objects that need to be modified or removed in order to suffice the customer's wants and needs. Here, the authors (Tseng, Qinhai et al. 1999) also acknowledge the importance of the customer's participation and the possible development of the customer's own process structure resulting out of it. They realize "when customers participate in a service operations system, they always want to know the rules, guide, and orientation for their service experience" and "...this kind of customer contact object is required but in fact neglected" (Tseng, Qinhai et al. 1999, p. 62). But although this importance is conceded and it is even said that it has to be scrutinized, no definite approach or heuristic is suggested to do so.

As a conclusion, it can be stated that most service engineering models try to map, describe and/or analyze the design of the service process and the single activities during a service transaction; as well, they seek to adapt a customer's view on the process and find ways to include the customer experience in form of a customer path through the process. Yet, no model asks if and due to which conditions the customers themselves essentially form a process image of the service transaction, a structure that leads them through the service process and through which they know what to do. Most models are rather outcome-focused in terms of service quality but disregard the process aspect and thus the customer participation of the service production. The overview in figure 2-4 summarizes the previous findings.

Model	Characteristics & Benefits	Deficits
Service management control system (Kullven and Mattson 1994)	• Mapping technique to model the customer interaction with the service operations • intended consideration of the CP • classification of the SP's activities into different levels depending on their degree of interaction with the customer	• CP is merely considered from the service provider's point of view • classification is based on similar method like the blueprinting technique → no novel effect
Service design & management model (Ramaswamy 1996)	• Flow-chart model based on linear process procedure • comprehensible and detailed concept of service design phase and service management phase • intended consideration of customer expectations	• customer expectation is merely considered in terms of service quality and the outcome of the service performance • disregard of the customer role as a participant during the service process
STA [Service Transaction Analysis] (Johnston 1999)	• walk-through audit providing a model to systematically analyse the service process with the focus on customer experience • intended consideration of the customer viewpoint • inclusion of physical service elements and service scripts	• focus on service outcome and quality • disregard of customer participation during the service production process • scripts are only referring to company-internal scripts of employees and managers
IDEF3-technique (Tseng, Qinhai et al. 1999)	• map of a process flow description diagram • customer as key element of the process description • importance of CBUs & customer contact objects • importance of customer wants & needs • acknowledgement of the importance of customer participation	• lack of further elaboration of the customer participation • a definite pproach is missing • too superficial; needs to be scrutinized • lack of any kind of heuristic
SADT [Structured Analysis and Design Technique] (Kim and Kim 2001)	• a set of interconnected diagrams to grasp the complexity of a service transaction • service activities as the key components • very extensive description of the service activities by means of 4 dimensions: mechanism, control, input, output	• graphically complex illustration • interaction activity flows between customer and service provider are not sufficiently taken into account • insufficient consideration of the customer perspective • focus on information flow modelling rather than on process flow modelling

Figure 2-4: An overview of service engineering models

2.5 The service blueprint

A service blueprint offers a tool to visualize the service designer's concept and therefore serves as the basis of a customer-oriented as well as provider-oriented process organization (Fließ 2006). It portrays the service system and its processes by chronologically depicting the

steps of service delivery and the activities of the customer-contact points, as well as backstage activities and further supporting service elements (Shostack 1992; Lovelock and Wright 2002). Not only does the service blueprint provide a helpful method to document the service by illustrating it as a picture map and thus creating process transparency. It can also be used as a tool of analysis for the identification of fail points, as well as a tool of service planning and design (Fitzsimmons and Fitzsimmons 1998). A physical product cannot be manufactured without detailed construction specifications. Therefore, the production of goods usually involves a resource record, a product plan with material listings or a "recipe formula" with ingredients, components and manufacturing methods. Likewise, the production of services requires a systematic procedure that is based on process modules as the core element of services, which is the purpose of a service blueprint (Shostack 1977; Shostack 1982; Easingwood 1986).

The service blueprint is focussed on structuring all activities of a service process according to their degree of customer proximity and customer integration, or – speaking from a more active angle from the client's perspective – the degree of co-production (Bowen 1986; Groenroos 1990). The terms customer integration or co-production refer to the notion that service performance implies the combination of the service provider's internal resources with the external resources from the customer's side, e.g. the customer in person, information data or the right of disposal. Equally, the client mostly participates in the service performance by 'delivering' and contributing his/her resources (Lovelock and Young 1979; Mills and Morris 1986) . Offering a white-water rafting tour, for instance, the service provider cannot perform the service without the presence and participation of the client. It is of particularly high relevance for service design and delivery that the customer's integration be taken into account in all elements of the service and throughout the service process (Brown, Fisk et al. 1994). The service blueprint maps exactly where and when the customer's integration needs to take place in the process.

2.5.1 Stages of historical development

Originally, the technical term 'blueprint' traces back to the word for test imprints, a bluish diazo copy that is created to check print proofs (Wikipedia 2004). A variety of other areas which are characterized and defined by processes have adopted the blueprinting concept - among them industrial engineering, logistics, computer systems analysis, and decision theory

(Shostack 1992; Zeithaml and Bitner 1996). In addition, the service blueprint concept directly derives from edificial architecture where it is used to outline the construction of buildings like restaurants or hotels and the paths customers strike within the building. This represents the basis for the transfer of the idea into service design later on.

Shostack (1981; 1984) first applies the blueprinting concept as a visual diagram for the design of a service delivery system. Initially, the service blueprint is set up with only one line, namely the "line of visibility", separating the onstage activities of the customer-contact staff from the backstage activities that are banned from the client's perception and vision. This model identifies all the key activities that service delivery and production are concerned with, as well as their chronological sequence (Shostack 1982). Furthermore, the model shows the links between these activities and highlights the interaction points between the front-office employees and the customers, the so-called "moments of truth" or service encounters (Norman 1984, p. 89; Carlzon 1987). These service encounters point out where customer integration takes place. Thus, the service blueprint offers a method to visualize the process of customer integration and customer interfaces. In addition, possible fail points as well as the maximum time for each activity are indicated in the model. In this way, it is possible to avoid service defects and compile a timeframe for the service in total (Shostack 1984; Fitzsimmons and Fitzsimmons 1998).

Following Shostack's tradition of service blueprinting, an advanced model was developed and termed "service map" (Kingman-Brundage 1991). Some authors differentiate between service blueprinting and service mapping, referring to a service blueprint as a method for planning new or modifying services, while regarding the service map as a tool to portray an existing service process (Gummesson and Kingman- Brundage 1992; Lovelock 1996). However, the view held here is that the latter concept is based on the initial service blueprint (Baron and Harris 2003), but is merely more advanced, and both concepts are valid for both purposes (Shostack 1984; Shostack 1992; Kingman-Brundage, George et al. 1995; Fitzsimmons and Fitzsimmons 1998). Consequently, the more highly-developed blueprint pays greater attention to the structuring of the service provider's internal activities, resulting in more lines, namely the line of internal interaction and the line of implementation (Kingman-Brundage 1991). The model now visualizes the organizational structure and shows the various departmental and staff responsibilities involved in carrying out the actions and tasks within the service process (Heskett, Sasser et al. 1997). At the same time, it places emphasis on customer interaction

with the service operator by introducing the line of interaction (Baron and Harris 2003). In dependence on this model, Kingman-Brundage (1995) suggests the 'service logic map' which deduces the dynamic relationships between the different activity levels.

The main progress in advancing the service blueprint is the differentiation between the level of customer activities, the level of management activities and the level of service operation activities as the link between them (Kingman-Brundage, George et al. 1995). Taking this notion a step further and adopting a production-theoretic perspective (Cooper and Edgett 1999; Fließ and Kleinaltenkamp 2004) leads to a revised model of the service blueprint which again brings in a novel line, the "line of order penetration". This line separates customer-induced activities – involving the integration of the external resources from the client – from customer-independent activities. The former blueprint version focusses on different departmental responsibilities and the organizational structure of the service process. The adapted blueprint version, though, further refers to the service company as part of the value chain and to the managing of process efficiency (Bowen and Jones 1986; Mayer, Bowen et al. 2003; Fließ and Kleinaltenkamp 2004).

2.5.2 Structure of the service blueprint

As stated earlier, the service blueprint offers a systematic method to visualize, to structure and to design service transaction processes. The model is constructed out of up to five lines separating six activity levels or zones from each other (see Figure 2-5). All activities on the different levels are illustrated in a flow-chart mode; but unlike traditional flow-chart models the service blueprint embraces both process and structure. To achieve this, the process is represented by the horizontal axis, whereas the structure is indicated by the vertical axis. Lines and levels are arranged horizontally with the process activities appearing from left to right in chronological order (Mattson 1994; Lovelock and Wright 2002).

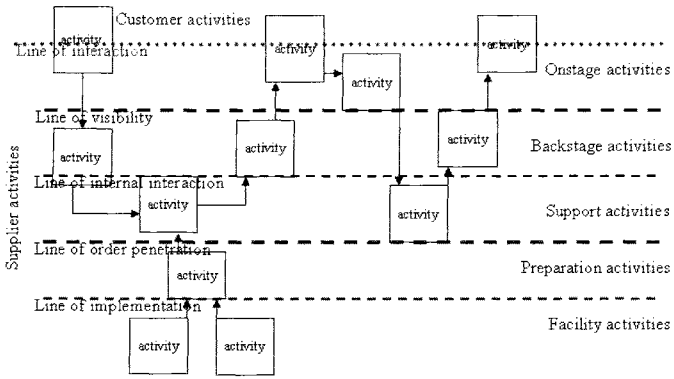

Figure 2-5: Structure of the service blueprint

The upper line is called "line of interaction" and divides the customer activities from the onstage activities of the service provider. Here, the customer activities comprise the steps, choices, actions, and interactions that the customer performs when purchasing and consuming the service (Kingman-Brundage 1989; Kingman-Brundage 1991; Shostack 1992). In a tourist service situation, for example, the client's activities may include amongst other things the decision to contact an adventure tour operator, the phone call to the tour operator, the decision for a white-water rafting tour, the acceptance of liability agreements, getting dressed in a wet suit, following the instructions of the rafting coach, and paying the bill. The onstage activities are performed by a contact employee or a machine and are visible to the client (Zeithaml and Bitner 1996). Continuing with the example of the tourist situation, onstage activities might embrace the actions of the rafting instructor, such as helping the clients to find the right position in the kayak or giving instructions how to behave during the ride.

Following on a lower level is the line of visibility that divides the contact employee activities, i.e. the customer interface, into onstage and backstage activities. Here, the differentiation is based on the unit who or which is carrying out the activity in question, instead of a differentiation according to the level of value creation (Kleinaltenkamp 2000). Backstage activities are those steps and actions that are performed by the contact employee and occur beyond the client's perception, which means they are invisible for the customer (Zeithaml and Bitner 1996). Considering the rafting service, the instructor might have to arrange for the

appropriate number of kayaks and coordinate details concerning the tourist group, both of which he would do behind the scenes.

The line of internal interaction separates the backstage from the support activities which include most office duty or prearrangement activities (Kingman-Brundage 1991). In most cases, these activities are not carried out by customer contact personnel. Within that activity, zone-internal subdivisions translate customer information data into customized outputs. The tour operator's secretary, for instance, has to engage the rafting instructor, once the customer has confirmed the booking.

Up to this point, all activities are induced by a concrete customer activity, i.e. a customer order (see also Figure 2-6). These customer-induced activities are separated from the customer-independent activities by the line of order penetration. Since the 'customer-independent' activities on the two bottom activity levels engage management indicators and therefore refer to the service provider's potential as explained earlier, they can be seen as segregated from the service process operations itself (Kingman-Brundage 1989). The two bottom levels are referred to as "preparation activities" and – again separated by the line of implementation – eventually "facility activities". Activities in these bottom levels comprise pre-standardisation of the service offer and deal with questions of capacity and ex ante supply (Kingman-Brundage 1995; Fließ and Kleinaltenkamp 2004). Correspondingly, onstage activities, backstage activities, and support activities imply the processing of the customer's resources, whereas preparation and facility activities are carried out based on the service provider's resources, implying managerial and planning actions.

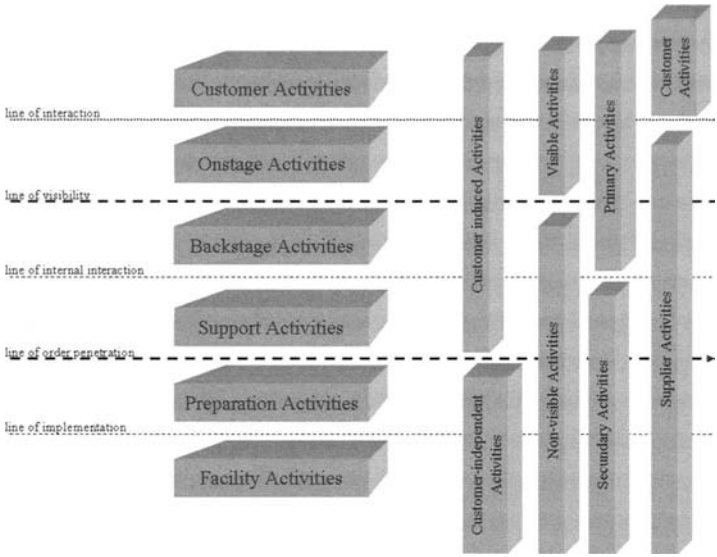

Figure 2-6: The blueprint activity levels

2.5.3 A blueprint for process transparency

The service blueprint helps to create process transparency at all stages of the service process – not only for the service company and the concerned staff but possibly also for the client, depending on the service situation, the type of transaction and the resulting degree of customer involvement (Bateson 1985; Song and Adams 1993; Agnihothri, Sivasubramaniam et al. 2002; Swan, Bowers et al. 2002; Lundkvist and Yakhlef 2004). A tourist, for instance, who is about to book a white-water rafting tour with the adventure tour operator, might feel safer and more convinced if the contact person is able to provide an outline of the forthcoming event. By pointing out the activities around the line of interaction, the service provider can reduce the customer's uncertainty and shape his/her idea of the purchase (McCallum and Harrison 1985; Parasuraman, Berry et al. 1991). Apart from that, the uncertainty for the tour operator is reduced (Bowen and Jones 1986; Larsson and Bowen 1989; Tansik and Smith 1991; Storbacka 1992) once it has been ensured that the client knows what he is engaging with and how to participate in the service process (Mills and Morris 1986).

The service blueprint can also be applied in other contexts: since blueprints mainly represent a method for process structuring, they can be of use to employees to structure their own tasks (George and Gibson 1991; Kingman-Brundage 1991; Agnihothri, Sivasubramaniam et al. 2002). That is, they can be used as planning aids for an efficient resource input and therefore assist those employees who are responsible for controlling and implementing material and personnel resources (Groenroos 1990). Above all, blueprints can be used as a tool to train and to instruct new employees because they can point out the activities of a particular employee embedded in the overall picture of the service company or the department in charge. Therefore service blueprints can contingently serve as job descriptions (Lovelock and Wright 2002). They are suited to generate transparency throughout the process, i.e. for all parties involved in the service transaction (Shostack 1992; Zeithaml and Bitner 1996).

2.5.4 The service blueprint as a tool of analysis

Structuring the entire process of a service transaction, the blueprint method is eminently qualified as a tool of analysis. Disruptions and gaps within the service process can be identified and, accordingly, the service process can be planned more efficiently (Agnihothri, Sivasubramaniam et al. 2002; Lovelock and Wright 2002). In this, process interfaces that indicate deficiencies or possible failings regarding the interaction with the customer are of particular importance (Tseng, Qinhai et al. 1999).

Depending on the motivation and the target element of the analysis, the blueprint can be interpreted from different angles. If the purpose is to analyze the customer perspective of the service process, the blueprint must be read from left to right, centring the upper levels of the blueprint. On this view, the events that happen in the client's action and perception zone are pursued. The main focus, for instance, is then set on how the service is activated by the client or which decisions are made by the client. But this analysis mode can also help to examine whether the client is very involved in the service production process or if many actions are expected from him to perform the service (Congram and Epelman 1995; Zeithaml and Bitner 1996; Lovelock and Wright 2002). If the purpose is to analyze the role of the customer-contact personnel, the blueprint needs to be read horizontally, focussing on the activities around the line of visibility. In doing this, it becomes clear who interacts with the customer, when and how often the service encounter takes place and how many employees are actually responsible for servicing the customer. Analyzing the blueprint vertically helps to identify the

integration of different process elements and employees into the overall process. It sheds light on the crucial activities and employees and how they are linked up (Zeithaml and Bitner 1996). Some activities, for example, might be carried out backstage in order to support critical customer interaction points.

2.5.5 The service blueprint as a tool of (re-)design and planning

The service blueprint is highly suitable for the design and innovation of services (Shostack 1984; Baron and Harris 2003). Very often the development of novel services is characterized by "trial-and-error"-procedures; there is no systematic method of checking if the service essentially meets the requirements of the original idea and if the concept is complete and fully worked out. Blueprinting therefore offers an appropriate tool to structure the process systematically and to plan it as precisely and accurately as possible[12]. At the same time, it helps to construct the service based on the integration and the participation of the customer (Edvardsson, Haglund et al. 1995; Tseng, Qinhai et al. 1999; Baron and Harris 2003).

Similar conditions exist when redesigning or modifying existing services. Mostly, modifications of existing services focus on the enhancement of efficiency and effectiveness of the service transaction (Lovelock and Young 1979; Hammer and Champy 1994; Lovelock and Wright 2002). A higher efficiency predominantly entails a benefit for the service provider, whereas increasing the effectiveness mainly aims at a superior offer and advantages for the client. Often service processes consist of redundant process steps or a too complicated design. Such process pathologies can be found by dint of the service blueprint; they can then be "cured" by eliminating or parallelizing process activities, but also by avoiding back-loops or merely by simplifying the course of the process. For the most part, these modifications in terms of efficiency are reflected in the reduction of complexity (Fließ and Kleinaltenkamp 2004).

If the aim is to increase the effectiveness of the service outcome, i.e. the customer is offered an excess service, the process structure might also become more complex (Baron and Harris 2003). In the example of the adventure tour operator, the tourist could be offered not only a white-water rafting tour but also an adequate video of the tour. This way, the tour operator

[12] With regard to the blueprint, Fließ (2006) also refers to a classification of process design and process management categories that take place within the customer-induced activity levels of the service blueprint and are based on selected fundamental theories.

would provide the client with an extended offer; at the same time, he would face a more complex situation because he has to coordinate the bookings not only with the rafting coach but also with a person or a supplier that provides the video equipment and capabilities.

The different lines of the service blueprint are very well qualified for a technique of process modification and design because activities can be shifted between them. Shifting activities over the line of interaction implies that either more activities are performed by the client himself, i.e. the process contains a larger number of self-service elements, or the reverse (Hoffmann and Bateson 1997). In the case of the adventure tourist, instead of offering a pick-up service that takes the client straight to the wild water location, the client now has to take care of his/her own transport. If activities are shifted over the line of visibility, bigger or smaller blocks of the service process are made visible or perceivable to the client (Laws 1997). A well-known example illustrates the tracking option of parcel services. This way, the service provider has the possibility of signalling to the client that he has a good grasp of his processes. Activities can also be shifted over the line of interaction in order to avoid interface disruptions within the process and to transfer internal responsibilities. Thus, customer-contact employees, for instance, can be given more authority and access so that they are able to service their customers better and more promptly (Zeithaml and Bitner 1996).

By and large, the shifting of activities over the line of order penetration or the line of implementation results in a higher or lower degree of standardisation because activities are carried out beforehand without a concrete customer order or booking (Fließ and Kleinaltenkamp 2004). Even though standardization mostly entails cost reductions, opportunities for customized service offers or customized adjustments are constricted and can therefore impact customer satisfaction. For this reason, the service provider needs to find an optimal balance between standardization and customization in order to limit costs and realize customer orientation (Kelley, Longfellow et al. 1996). In the same way, the decision has to be taken whether all capacities are to be set up by the service company alone or if some activities are to be outsourced and engaged by an external sub-supplier. That decision results from the shifting of activities over the line of implementation and implies the embedding of the service company in the network of the value chain.

2.5.6 Blueprint applications and deficits

Service blueprints can be applied to any conceivable service situation and any type of service. Nevertheless, since the fundamental idea of the blueprinting concept embraces the idea of organizing the process activities according to the requisite degree of customer integration, some services seem to be more eligible than others. Services in the tourism sector, for instance, often necessitate a high level of customer integration as the white-water tour example used before has shown. This example also makes it clear that service blueprints are always embedded in or interrelated to other blueprints: the adventure tour operator might sell other activities like glacier climbing tours or sky jumping and engage sub-contractors for all those service offers. In this case, blueprinting the service process of the adventure tour agency possibly requires generating the service blueprint of a separate rafting operator, a mountaineering- and a skydiving-operator. The service blueprints of all those different service companies then have to be coordinated and eventually integrated into an overall blueprint of the tourist region.

As stated earlier, in many service settings there is quite a high level of interaction between the service operator and the client[13]. The blueprinting concept not only helps the service provider to portray his own internal processes but first of all indicates where and when the interaction with the customer takes place and which activities and contributions are needed from the customer during the service transaction. Starting from the fact that a blueprint is used to structure, analyze and finally optimize the service transaction process with the client, there is a crucial deficit: so far, service blueprints have only been used to portray the provider's side of the process; the client's processes are reduced to the activities on the line of interaction. But if the entire service transaction is to be optimized, the customer's processes have to be taken into account in the same way. In order to align the service operator's process optimally with that of the customer, there is a need to extend the service blueprint beyond the line of interaction and identify the customer's process more thoroughly (see Figure 2-7). Just as the service blueprint represents an explicit form of the service provider's process structure, an implicit model structure (Noteboom 1999) must exist on the client's side with which the customer enters and navigates through the service situation. In this respect, a mirror image of the provider's process in terms of a blueprint structure could be conceived as existing on the customer side (see also Fließ 2001). This structure can be comprehended as the customer's

[13] For a more detailed differentiation of customer participation in services, see also Eiglier and Langeard (1999), esp. p. 38 – 41.

service script, an internalized sequence of events that indicates to the client what actions to perform during the service process (Abelson 1976; Schank and Abelson 1977). Since this part of the model is not yet integrated into the service blueprint, it remains to be scrutinized.

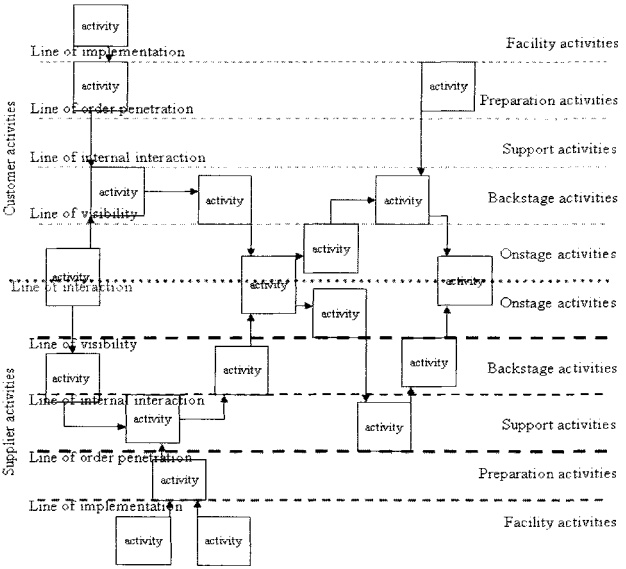

Figure 2-7: "Extended blueprint"

If suppliers include the customer side in their process analysis, they will be able to align their own internal processes better to the customer's ones and improve the customer integration process for the client. As the supplier gains a higher level of process transparency and thus an improved understanding of the customer's processes, it will influence the supplier's process structure. Referring to the different process levels as indicated earlier, the analysis of scripts may at first have an effect on the supplier's business process design and in the long run even on the structure of the value chain.

Particularly thanks to the additional knowledge derived from script analysis, suppliers are now able to focus on the entire process of the business transaction including the customer's side, i.e. extending the supplier's view of the transaction process. As a result, they can not only optimize their own processes in terms of efficiency, but can even identify weaknesses and room for improvement in reference to the process as an entity. This could also cause a reorganization of business transaction processes. As illustrated in section 2.5.5, a blueprint

serves as a tool for process designing and planning and can therefore result in a shift of activities in order to improve process efficiency. Such shifting, particularly across the line of interaction, may involve a reallocation of process activities between customer and supplier. By including the customer's side, it is made clear where an activity should actually be shifted to in the context of the entire process.

Often the supplier is forced to go further than merely redesigning the process. The additional knowledge acquired by the script and business transaction analysis can not only result in a shift of process activities, but may even have further implications for the design of the supplier's potential activities[14]. As the supplier's "process knowledge" may also be transformed into "potential knowledge" (see Kleinaltenkamp 1998), the results of the script analysis may also be used for the design of the transaction process and the formation of the supplier's potential. If the supplier's potential is modified, due to the development of new offers for instance, it can eventually affect the entire value chain or at least parts of the value chain's structure. Thus, the script analysis not only results in an improvement of business processes, but in a reallocation of resources in terms of a modified potential or even a modified value chain structure.

However, the development of new products or services does not necessarily imply changes in business processes or the value chain. Especially in this context, the supplier can profit from one of the script functions, namely the establishment of analogies (see chapter 4) which shows high relevance for the design of new customer solutions, primarily services. Once the supplier knows the customer's script model of an existing business process, he can design a novel solution offer based on that script. By designing product-service-offers according to the script that the customer has already internalized from previous transaction processes, the supplier will make it easier for the customer to integrate himself into the new transaction process.

As the discussion has pointed out, applying the "extended" blueprint can foster process redesign, the design of new processes or even modifications in the value chain. In this way, it not only helps to improve the efficiency of existing business transactions but can also increase

[14] The term "potential activities" refers to all activities in a service blueprint that deal with the disposition and the management of the firm's internal resources as well as the structure of the organization. Therefore, these activities are considered as customer-independent and as preliminary to all process activities, which are induced by the customer.

effectiveness by creating new product-service-offers for the client. In order to attend to the customer process in more detail, it is first necessary to take a closer look at transaction cost theory as the theoretical link that directly relates the provider's process side to that of the customer.

3 Transaction cost theory

The transaction cost theory can be considered as the basic theoretical framework that analyzes the relation between the service provider and the customer process; thus, the theory embeds and governs both sides of the process. Therefore, with reference to the efficiency aspect of the service, the transaction cost theory not only represents the link between those two processes but it also offers an explanation of why they have to be understood as a comprehensive process entity. In context of this research, the present chapter will mainly be based on the understanding of transaction cost theory proposed by Fließ (2001), whose seminal research approach seems to be the most expedient for the purpose of the line of argument here. Starting from these considerations, transaction cost theory will be related to the concept of scripts as well as to the service blueprint.

3.1 A definition draft of transaction costs

"A transaction occurs when a good or service is transferred across a technologically separable interface" (Williamson 1996, p.379). Williamson (1975; 1985) as well as Coase (1937) interprets a transaction – from the perspective of the provider – as every activity of obtaining an external resource factor[15] in the context of a customer integration process[16]. Transaction costs arise out of the necessity of coordinating economic activities; in this, costs resulting from the utilization of market mechanisms as well as from the utilization of a company's organizational structure are considered as transaction costs. Coordination costs in this context refer to inter-, as well as intra-firm activities; therefore, transaction costs affect both the service provider and the customer.

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15 The distinctive feature here is the fact that the supplier of the input factors, i.e. the external resources, is always the same, namely, the service customer.

16 The word "process" derives from the latin word 'procedere'; in general it signifies a proceeding, a course of actions or of events. In technology and business, the term denotes a logical or practical sequence of functions that an object or a system passes through in order to achieve a final state or result (Wikipedia 2005). For the research purpose of this thesis, a process shall merely be considered as an arrangement of activities and resources. "A service process links together activities with resources and is defined as the set of interrelated tasks or activities that are required to deliver a service (or product) which together, in an appropriate sequence, create the service" Johnston and Clark (2001), p. 138. With such an extremely general point of view, all process steps and elements that constitute a service can be captured.

In order to define a transaction thoroughly in a more service-related context that can be used for the research purpose of this thesis, it seems sensible to take a closer look at those aspects that 'take place' during a service transaction:

- In a service transaction the customer and/or the resource factors of the customer organization[17] are integrated into the service provider's process. This procedure is called customer integration (see also section 2.2).
- By combining the internal resources with the external resources of the customer the service operator produces the service outcome.
- Since the customer or the resource factors of the customer organization – as external resource factors – contribute to the service production, the term used is called customer co-production
- The resource exchange not only takes place uni-directionally, i.e. customer resources are integrated into the service provider process, but resources of the service company are also contributed to the customer's company: e.g. a consulting company dispatches a team of employees into the company of the customer, for a transitional period of time they are working in the company of the service customer and they can be considered as supplementary or temporarily additional "external" resources – here taking the perspective of the customer.

The following conclusion can be drawn from the considerations above: in a service transaction, elements from the customer company and the service-providing company merge and blend into one, creating the service outcome. The two separate processes of both organizations engage with each other and mesh together. As a result, a service transaction can be identified as a comprehensive process linking both the customer process and the service operator's process. It is therefore essential to coordinate and synchronize the two separate processes in order to achieve a single, efficient and harmonized comprehensive service transaction process. A fairly comprehensive view of transaction costs summarises this understanding of a service transaction in the following definition: transaction costs are the "costs of resources utilized for the creation, maintenance, use, and change of institutions and organizations. They include the costs of defining and measuring resources or claims, the costs

[17] In most economics based theories, e.g. Evolutionary Economics, New Institutional Economics and TCE, in particular, terminology is very strict. Thus, Noteboom (2004) for instance defines an organization as "any form of coordinated behavior, while a firm is a special form of organization, with a legal identity concerning property rights, liability and employment". However in what follows, all three terms - firm and organization as well as institution - will be used to denote a service (providing) company.

of utilizing and enforcing the rights specified, and the costs of information, negotiation, and enforcement" (Furobotn and Richter 1997, p. 40).

The customer process and the service operator process can only be linked on the basis of interaction – personal or impersonal. Hence, interaction represents the core of a transaction. Through interaction the customer and the service company, as the two actors, are able to learn from each other and find the best way of "reciprocal assimilation" (Noteboom 1992, p. 297) to each other's processes. Interaction offers the chance to complement the company's own perspectives and competences on the basis of communication, but at the same time it holds risks. Time as well as investment is required and transaction relations are expected to last for some time so that the investment can amortize. In this, each investment is transaction-specific – for both service supplier and client – and therefore enhances the symmetry of the reciprocal uncertainty and dependence (Noteboom 1992).

3.2 Origins and basic assumptions of transaction cost theory

Transaction cost economics (TCE) was originally introduced by Coase (1937) who tried to explain the existence of firms. Williamson (1975; 1985) then developed the idea further and elaborated the dependency of firms on outside partners – the term 'partners' here comprises the business relationship between service supplier and client – leading to disadvantages due to transaction costs, opportunism and uncertainty.

Transaction costs as "the costs of negotiating, monitoring, and enforcing the exchanges between parties to a transaction" measure the efficiency of a transaction (Bowen and Jones 1986, p. 430). Identifying the costs of coordinating economic activities[18], TCE is based on two behavioral assumptions: one is bounded rationality[19], the other one is opportunism.

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18 Fließ (2001) differentiates ex ante transaction costs on the one hand, i.e. costs caused by uncertainty-reducing measures that are taken to frame contracts and to ensure contract fulfilment, and ex-post transaction costs on the other hand, i.e. costs due to uncertainty-reducing measures that are taken after the conclusion of the contract, e.g. costs of additional and ex post contract adjustments, or costs to assert contract fulfilment.

19 The boundedness of rationality goes beyond information cost, scarcity and limited capacity for its processing. Arrow's information paradox offers an explanation: someone who lacks information may also not know its marginal utility and marginal cost. The person is therefore unable to balance these in the maximization of utility. The transaction specificity of information may then also be unknown beforehand. On the other hand, a person who possesses all that knowledge will probably already have the information and does not need to invest in information acquisition any longer. A person therefore faces the dilemma of obtaining evaluative information and relying on prior information, which causes further transaction costs and opportunism (Noteboom 1992).

Owing to those two conditions, transaction costs actually evolve because assets, investment and other process features are transaction-specific. Thus, service provider and customer, as the transaction partners, become dependent on each other[20]. The actors face bounded rationality because information is scarce and costly and the capacity for information processing is always limited. Bounded rationality[21] is based on the fact that it is impossible to foresee all potential contingencies of a situation, especially those arising from opportunism; therefore there cannot be a complete contract prior to commitment that covers all contingencies. Opportunism is the reason that contracts exist and cannot be left incomplete; the idea that unforeseen contingencies could be met out of cooperation and mutual benevolence does not match reality and takes no account of the phenomenon of opportunism (Williamson 1985; Noteboom 1992). Due to bounded rationality and opportunism, transaction costs occur because contracts have to be negotiated to reduce the ensuing uncertainty. Measures of cooperation have to be identified and established and the process as an exchange of activities and resources has to be coordinated.

TCE focuses on problems of information or rather information asymmetry which occur due to the dependency on a business transaction partner (Williamson 1975). "The basic idea in TCE is that in economic relations there are risks of dependence, which can be difficult to control for lack of reliable information on competencies, intentions and performance..." This phenomenon is of particularly high relevance in supplier-customer service transactions: the service operator, for instance, faces the risk that the customer lacks the competency to co-perform during the service production. In order to control relational risk within the hierarchy of a firm, activities have to be integrated within the firm, and to an even greater extent if dependency and uncertainty are high. This can also apply to the degree of integration of customer activities: on the one hand, the degree of customer participation can be varied; on the other hand, customer activities can literally be more integrated by including customer process activities more strongly into the overall service process from the service provider's perspective. Conventional TCE tries to explain the function and the boundaries of a firm but it lacks both the idea of learning and an adequate embedded theory of cognition (Noteboom 1992; Noteboom 1999).

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20 This phenomenon can also be described as a "Lock-In" effect in path dependency theory (see, for example, Cowan (1991), Liebowitz and Margolis (1995), Egidi and Narduzzo (1997).

21 More specified, bounded and organic rationality can be differentiated. These differentiations as well as all following implications concerning uncertainty handling in dynamic transaction cost theory are based on the assumptions of Radical Subjectivism Market Process Theory rather than Austrian Market Process Theory. For more detail, see Fließ (2001), chapter 6.

3.2.1 Features from evolutionary theory

The lack of learning and cognition in TCE is compensated for by the embedding of evolutionary aspects (Nelson and Winter 1982; De Bresson 1987; De Mokyr 1990) and the resulting idea of dynamic transaction costs. In evolutionary theory, progress and development are initiated simply through knowledge and learning. In a dynamic analysis, knowledge technology and customers with whom the service firm is dealing can no longer be considered stable. Instead, the firm is confronted with a state of radical uncertainty. Standard TCE takes a perspective of static efficiency on transactions and thereby excludes dynamic efficiency (Fließ 2001). But learning and knowledge are important not only because a company's degree of innovation depends on it. Knowledge is gained through interaction with the customer - especially in service transactions. Both parties need and are able to acquire knowledge (Noteboom 2000). The customer is able to learn the necessary performance activities and the course of action of the process during the service interaction. No longer does the customer have to accept the given 'technology' of the existing service process[22]; his/her participation in the service production in turn changes the transaction process and results in further dynamics of the process that the service provider has to keep up with.

Looking at the contributions that evolutionary economics contribute to TCE, it can be said that not only does an organization's right to exist and its ability to perform depend on learning through interaction. Beyond this, learning will also secure the organization's future development and existence. That aspect of embedded learning results in a broader view of transaction costs and extends it into a further dimension incorporating the dynamics of learning (Noteboom 1992; Noteboom 1999).

3.2.2 Individual and organizational level

Transaction costs can be looked at from a macro and from a micro level (Noteboom 1992). The interactions between organizations or between different actors in organizations are governed by implicit rules, norms or values that are developed and exchanged (Ouchi 1980). From a macro perspective, transaction costs evolve due to institutional arrangements and bilateral interaction between organizations. Such arrangements have to be made so that a

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22 Gnoth (1994) also refers to the 'technology of service'; however, he is using the term to describe service quality. According to Gnoth, a service is determined by four interrelated technical elements, namely analysis, interpretation, combination and execution. The service "technology involves the conception and creation of the final outcome, i.e. how the technical elements are to be employed..." (Gnoth 1994, p. 280).

single institution does not have to specialize at a very high degree, which would in turn result in soaring internal transaction costs (North 1990). The rules and norms that govern institutional interactions are based on individual interaction patterns. Thus on a more micro level, frequently repeated activities result in habitualization, a quasi-substitute for institutional rules or norms. Habitualization provides 'psychological relief' with which cognitive capacity of the individual can be economized. An individual's interaction patterns cause less transaction costs if they are governed by habitualization (Berger and Luckmann 1966) because it replaces external coordination mechanisms. That is the reason why scripts are of such high significance: they represent a type of habitualization but they focus on the process characteristics which are particularly important in terms of the service production and delivery process. Scripts – in contrast to other forms of simple habitualization – comprise not only the role of the acting individual but also other aspects that are relevant in relation to interaction patterns and the performance of the service transaction.

3.2.3 Cost categories in a service transaction

Based on the different uncertainties that are incorporated in a service transaction and on the course of producing and delivering a service, different categories of costs can be differentiated. First of all, even though services are characterized by a high proportion of intangibility, every service performance involves production costs. The traditional definition in terms of neo-classical microeconomic theory (e.g. Wegehenkel 1981; Ekelund and Hebert 1999) regards production costs as the prices of all [physical] input resources that are necessary for the technical production of an outcome, multiplied by the amount of resource used, i.e. all costs that involve the consumption of input resources. Instead, a more general and more appropriate definition in terms of a transaction cost approach considers production costs as always referring to the present or even as past-oriented. Production costs therefore refer to a given and unchangeable situation which resists the anticipation of potential uncertainties and they apply to individuals acting in certainty. Accordingly, production costs and transaction costs can be distinguished on the basis of the factor time (Fließ 2001).

Transaction costs always relate to future-operating courses of action. Either they are caused due to a reactive performance, i.e. uncertainty reduction and limitation, or they arise due to (pro-)active conduct, i.e. constructive uncertainty handling with a stronger formative and future-oriented focus. Measures of uncertainty reduction that are intended and planned by

rational actors in terms of a neo-classical understanding result in static transaction costs. These transaction costs evolve when a reduction of the effects of parametric and structural uncertainties, viz. uncertainties caused by the behavior of the service transaction partner, is attempted. On the one hand, measures leading to static transaction costs can consist in the acquisition and transmission of information. Yet, static transaction costs do not exclusively consist of information costs, rather, they originate from incomplete information and arise due to coping with it. That means the attempt to handle incomplete information and the manner of doing so causes transaction costs. On the other hand, developing, constructing and using institutions and routines are measures which lead to static transaction costs (Fließ 2001).

On the other hand, dynamic transaction costs are caused by using and constructing structural uncertainties. That is, they are caused not by the limitation of uncertainty, but rather by the limitation of the customer's (as the transaction partner) action alternatives by the service operator's own actions, i.e. by creating a new framework. In order to manage structural [and radical] uncertainty, the service provider attempts to acquire knowledge and skills. That knowledge does not yet exist and, at the moment of planning, the service operator might not even know that it will be needed in the course of the customer integration process. Therefore, it can be said that dynamic transaction costs originate in knowledge-generating processes and have a constitutive effect on the future. On a value basis, dynamic transaction costs can be considered as an equivalent for the consumption of resources caused by the learning process (Fließ 2001).

Consequently, production costs, which assume a static condition, conceptualize existing knowledge and skills of a company that are considered to be certain. But since all knowledge will at some point be obsolete and need updating, static transaction costs signify a company's ability to survive and to keep up with updated and prevailing standards. Ultimately, dynamic transaction costs represent change, pro-active knowledge increase and innovation to secure a company's long-term success (Noteboom 1992; Fließ 2001).

3.3 Uncertainties and scripts in service transactions

3.3.1 Uncertainties in service transactions

Transaction costs evolve due to information asymmetries between the transaction partners. These information asymmetries are particularly reflected in service transactions – not only

because the intangibility of services entails the dominance of experience and credence qualities[23] in the service production process as well as in the service outcome, but most of all because the customer participates in the service production. Due to the customer's co-production, information asymmetries are bilateral and therefore frequently confront both the service operator and the customer with high uncertainties – depending on the degree of process apparentness on both sides[24] (see section 2.3). Those uncertainties which occur in customer integration processes and complicate the planning and the arrangement of internal and external resource factors need to be reduced as far as possible. Furthermore, organizational prerequisites have to be provided, altered or applied in order to limit and handle those uncertainties. Whereas uncertainty reduction results in static transaction costs, uncertainty limitation in a more formative sense causes dynamic transaction costs (Fließ 2001).

Uncertainties[25] affect three different areas of the customer integration process in a service transaction: integration uncertainty, production uncertainty and planning[26] uncertainty. Integration uncertainty occurs when service provider and customer have imprecise knowledge about the service performance process. If process apparentness is low, either the customer may not know where and when in the process what kind of resource factors have to be delivered, or, indeed, even the service operator himself may lack the essential information for managing the activities on the line of interaction. Integration uncertainty carries forward into production uncertainty: a customer who does not know exactly which resource factors to contribute to the process will also experience production uncertainty if the required resource factors have to be preliminarily acquired or produced. Similarly, the service operator will face production uncertainty if the resource factors required from the customer are not adequately provided. Such uncertainty may affect the costs of the resource factor combination process as well as the quality of the service outcome. Again, production uncertainty may lead to planning uncertainty because the customer can only start arranging internal production

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23 To compensate for the domination of experience and credence qualities and the scarcity of search qualities that characterizes services, suppliers and customers often rely heavily on methods of information acquisition and transfer. This phenomenon, as a means of uncertainty reduction, will be noted later in the text.

24 Fließ (1996) differentiates four different types of customer integration processes: depending on the extent of process apparentness on both sides, the process turns out to be customer- or supplier-dominated, "trial and error", or an efficient cooperation between supplier and customer: see Fließ (1996; 2001) and chapter 8 of this thesis.

25 Based on Kleinaltenkamp's market transaction spheres, these uncertainties mainly refer to the sphere of factor combination: see Kleinaltenkamp (1997), Kleinaltenkamp (2005).

26 Fließ (2001) originally coined this term as "Dispositionsunsicherheit".

resources if he/she knows what kind of resource factors are required at what stage. Similarly, integration and production uncertainties interfere with the service operator's planning since the arrangement of internal resources depends on the integration of external resource factors (Fließ 2001).

These different forms of uncertainty relate to the service blueprint and have an effect on the respective activity levels. Whereas integration uncertainty is mainly relevant for the activities on the line of interaction, production uncertainty instead concerns the support activities. After all, planning uncertainty mostly applies to the potential activities, i.e. preparation but ultimately also facility activities, in the service blueprint. According to Fließ (2001), uncertainties that the service provider has to face in service transaction processes can largely be differentiated into "parametric" and "structural" uncertainties[27]. Parametric uncertainty is linked to aspects of integration-, production- and planning uncertainties that the actor has anticipated based on his/her own model structure. Such model structure can be explicit, e.g. the course of events as in the structure of a blueprint. It can also be implicit as for instance in form of a cognitive script of the service process, the key point of relevance for the present research. In both cases, each model structure guides and determines the action of the individual. It defines what parameters are considered to be constitutive for the course of the customer integration process. Uncertainties, for example, referring to the quality of the resource factors to be integrated or referring to the moments when those resource factors have to be integrated in the service process, i.e. integration uncertainty, will subsequently also affect the area of production- and planning-uncertainty. That is, parametric uncertainty relates to possible deviations of process parameters which are expected to develop or behave in a certain way.

In contrast, structural uncertainties cannot be identified by the actor due to his/her limited capabilities or due to the dynamic environment. Consequently, these uncertainties cannot be anticipated within the scope of the actor's model structure. Such uncertainties therefore refer to unexpected contingencies outside of the customer integration process, i.e. external circumstances like environmental events, which affect the service provider's integration-, production- and planning-uncertainty. For instance, due to a technical breakdown a delivery from the customer cannot reach the service operator in time. On the other hand, structural

[27] For a more detailed explanation of radical uncertainty, as a further type of uncertainty, see Fließ (2001) and the literature on the Market Process Theories of the Austrian School of economics and Radical Subjectivism, respectively, e.g. Kirzner (1996), Lachmann (1978), Horwitz (2001).

uncertainty can also originate from the fact that the service provider is not aware of aspects or elements within the customer integration process, for example due to the lack of crucial monitoring measures (Noteboom 1999; Fließ 2001; Noteboom 2004).

3.3.2 Dealing with uncertainty

In order to deal with uncertainty in customer integration processes, the service provider has several options. First, entrepreneurial measures can shape possible actions of individuals by constructing and structuring the future. They are used to handle structural and radical uncertainty. Second, measures of information acquisition and information transfer can effect the reduction of parametric uncertainty. And third, development and use of institutions and routines[28] can constrain the action alternatives of the customer and have a limiting effect on parametric uncertainty as well as a constitutive effect on structural uncertainty (Fließ 2001).

Entrepreneurial measures are intended to handle structural uncertainty. Since knowledge in the service production process is characterized by information asymmetries among service operator and customer, it has to be transferred between the two parties. Otherwise information that is necessary to make arrangements for the process set-up and which is required to operate the service production further is missing. If such knowledge is only available on one side, particularly if it remains in the hands of the customer, it results in low process apparentness on either side. That may subsequently be carried forward and entail low overall process apparentness, because one of the parties, for instance, due to the lack of information, misguides the process into a different and unexpected track. Once on this track, both parties face low process apparentness because the relevant knowledge to operate the customer integration process is not even available to one side but has to be generated from scratch. Thus, entrepreneurial measures may also refer to the generation of knowledge during the service production process and the attempt to overcome the time discrepancy between generating and employing certain knowledge in terms of process skills (Cohendet and Llerena 2001). This is important for the service provider to be able to equip and prepare for future process developments and new requirements. As portrayed earlier, entrepreneurial measures concerning the management of structural uncertainty in customer integration processes cause dynamic transaction costs (Fließ 2001).

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[28] Section 4.5.2.2 below will elaborate on routines in the context of cognitive constructs and will in this regard go into detail with direct reference to customer processes as scripts.

The second alternative in dealing with uncertainty relates to measures of information. On the one hand, informational measures imply the acquisition of information. This can take place in terms of autonomous information gathering; information then refers to a more anonymous market, such as, for instance, market research activities to identify certain customer groups based on characteristics that meet the requirements for successful delivery of their external resource factors and which therefore appear to be predestined for a successful customer integration process. Information-driven activities can also concern the gaining of integrative information. Here, the acquisition of information refers to a particular customer; e.g. the service operator might strive for information concerning the quality of the customer's resource factors prior to their processing. On the other hand, informational measures may concern informational transfer from or to the customer. Providing the customer with documentation material with which the customer is 'taught' when his/her resource factors should be delivered into the service production process, the service provider will effectuate higher process apparentness. For that purpose, a service blueprint, for instance, can be used; depending on the preferences of the service provider as to how much process information is made accessible to the customer, the blueprint or certain activity levels can be modified, customized or simply blended out. However, the initiative to transfer information does not inevitably have to be taken by the service operator. Likewise the customer can request a blueprint chart in order to be able to schedule the provision of his/her own resource factors and to compensate perceived information asymmetries[29] (Fließ 2001).

The third alternative to limit uncertainty can be found in the practice of institutions and routines. Institutions are "humanly devised constraints that structure human interaction. They are made up of formal constraints (such as rules, laws, constitutions), informal constraints (such as norms of behavior, conventions, self-imposed codes of conduct), and their enforcement characteristics" (North 1993, p. 360). Actors develop institutions and routines that constrain their repertoire of activities to a smaller range of actions so that they can react faster and therefore save cognitive capacity (Egidi 1993). "...institutions consist of a set of constraints on behavior in the form of rules and regulations; a set of procedures to detect deviations from the rules and regulations..." (North 1984, p. 8). By representing a system which intends to accomplish a goal-set they guide an individual's social behavior (Noteboom

[29] In information economics, these activities are labelled as 'signalling' and 'screening'; see Spence (1974), Stiglitz (1975), Spremann (1988), Kaas (1990; 1991).

2001). Consequently, an institution[30] can be defined in terms of an action system, comprising activities, sequential activities and courses of action.

According to Jacob (2002) institutions are composed of three components:

- a rule defining the consequences of a certain behavior,
- a sanction defining what happens in case of non-adherence to a rule and
- a suretyship certifying that the sanction is realized if the rule is violated.

Each institution is characterized by different shares of each component and the interaction between the components when they take effect. Based on these assumptions, Jacob (2002) has developed a typology for institutions that consist of those elements and depend on their reciprocal combination. Thus, institutions can be seen as contracts, pledges and/or bilateral behavioral program; yet, in most cases an institution only comes into operation with an arrangement of more than one type. Customer integration processes, for instance, for the most part not only require a contract concerning the service outcome but also rely on mutual behavior patterns.

The actors' performance is constrained by institutional structure but at the same time the actors also reproduce such structure (Archer 1995). Institutions, by applying administrative and social routines, act in the role of a coordination mechanism (Noteboom 1992). Relying on institutions and routines is useful for the actors because the scope of outcomes resulting from uncertain situations is restricted; thus, uncertainty reduction takes place in an indirect way meaning that neither the occurrence rate nor the action consequences of all possible events are taken into account (Fließ 2001; Egidi and Marengo 2002). They offer incentives for actors to forego taking advantage of opportunistic behavior because they are also considered as "a set of moral, ethical behavioral norms which define the contours that constrain the way in which the rules and regulations are specified and enforcement is carried out" (North 1984, p. 8).

Following the conceptual definition of institutions as recurrent behavior patterns and performance-guiding principles[31], habitualizations as well as routines are considered as institutions. Thus, the most basic appearance of a company as an institution can be thought of

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30 North, in order to find a meticulous discrimination between organizations as institutions and legal systems, proposes to use the terms more precisely and distinguishes between institutional environment and an therein embedded and more specific institutional arrangement North (1990).

31 This complies with the ideas of traditional institutional economics, see also Commons (1931).

as a productive routine which often comprises tacit and procedural knowledge[32] (Dulbecco and Garrouste 1999). In recapitulation, it can be said that scholars of the Austrian School, Evolutionary Economics, as well as Traditional Institutional and New Institutional Economics agree with the view that institutions have a function of behavior guidance. Due to precast behavior patterns, they constrain the variety of action alternatives, coevally supply information and thereby reduce uncertainty in terms of the transaction partner's behavior. Institutions and routines handle parametric as well as structural uncertainty and thereby cause static transaction costs. As measures of information, institutions can be developed autonomously, i.e. to tackle the general problem of various customer integration processes, or they can evolve for a particular case of a customer integration process. In the same way, they can affect an entire market as well as a single customer (Fließ 2001).

3.3.3 Service scripts as institutions

Service scripts, which consist of a sequence of events that define an individual's repertoire of actions (Schank and Abelson 1977) and which distinctively exemplify all characteristic features, certainly embody a representative, even though not classic, type of an institution (Noteboom 1996). Not only do they guide the actor's behavior and offer a set of procedures and activities but, most of all, scripts comprise the actor's own action as well as that of the interacting person (Schank and Abelson 1977). Therefore, scripts can be classified as the institutional type of a bilateral behavioral program.

On an individual level, scripts are of relevance in the form of internal- and external-related scripts. Intra-firm scripts apply to operational procedures or arrangements within a service company, i.e. interaction between employees of different company units, or activities which may be carried out in different activity levels in the blueprint. Inter-firm scripts, on the other hand, relate to matters of interaction with the customer. Since scripts can be found on "both sides" of a service transaction, they affect the service provider's as well as the customer's service process behavior. At the same time, they serve as a coordination mechanism to align the action system of the interacting parties, either between service employees or between service staff and customers. Similarly, organizational scripts exist, i.e. large-scale-scripts that define company-wide procedures and form an aggregation of action routines (Noteboom 1996).

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[32] For a more detailed delineation of tacit and procedural knowledge, see Brezillon and Pomerol (2001).

By supplying the actors with relevant information on the service process which is – at least to some extent – tacit and procedural, scripts support the actors' task performance (Cohen and Bacdayan 1991). For the customer, they reduce parametric uncertainty about the situation as such, for instance about the course of events; at the same time, they provide the customer with information about the role and behavior of the service employee with whom he/she is interacting (Schank and Abelson 1977). That information facilitates the customer's participation in the process and production performance by compensating for the uncertainties in the transaction.

Since scripts develop out of experience and therefore can be considered as a form of learning, they are adaptive and able to extend the range of situations to which they can be applied. Based on knowledge acquisition in one particular situation, scripts develop new procedural routes in order to adjust to a new or modified process (Schank and Abelson 1975; Smith and Houston 1985). This newly gained knowledge can then be applied in subsequent transaction situations, which points out the link to a dynamic transaction cost element in scripts: the moments of knowledge acquisition and application diverge. The actors' produced knowledge is employed in a service situation in the future. They can therefore be assumed to support the handling of structural uncertainty. The aspect of learning and adaptiveness in scripts also leads to the consequence that service operator and customer scripts are able to learn to adjust to each other. Scripts as institutions can therefore be a useful as well as an important instrument to complete contracts and offer a way to facilitate service transactions.

Scripts in the context of TCE may also be of particular significance when considering foreign markets. Exporting a service and entering a new market often implies the necessity to deal with new or at least slightly different customer scripts[33]. Cultural differences may influence customers' script characteristics and the consciousness as well as the willingness to perform as service co-producers (Knight 1999; Imrie, Durden et al. 2000; Cadogan, Sundqvist et al. 2002). Whereas some cultural societies are happy to participate in service production and delivery – as is the case in many individualistic-featured countries[34] - because they prefer to be in control of situations, other cultures, Japanese for instance would rather have a situation set up for them and try to avoid co-performance (Liu and Sudharshan 2000). Dealing with

[33] Within the scope of this research, the aspect of the heterogeneous scripts of service employees when employing staff from a different culture will be excluded from consideration.

[34] See Hofstede's cultural dimensions, e.g. Hofstede (2003).

diverse scripts and adjusting the service operator's process to it can result in higher transaction costs, mainly because there is more need for coordination and monitoring.

More generally, the idea of considering cognition as an essential aspect of economic life is adduced by an idiosyncratic field of study called "cognitive economics" (e.g. Egidi 1993; Egidi and Narduzzo 1997; Egidi and Marengo 2002; e.g. Novarese 2002; Novarese and Rizzello 2002; Novarese and Rizzello 2002; Walliser 2003) which – simplistically subsumed together – deals with economic agents in their interaction. A reason to integrate cognition into transaction cost theory is that all transaction is based on cognition or – expressed differently – to some extent cognition is part of every transaction, which is why there is an inevitable coherence between the elementary concepts of cognition[35], economics[36] and sociology[37] (Noteboom 2004). Cognition is ubiquitous and part of every individual who is, in turn, embedded[38] in his/her external environment (Noteboom 2004). Transaction costs mainly occur because cognition patterns between economic actors are not necessarily congruent. Shared cognition patterns are not only relevant within a company but also with regard to outside partners, including customers. The importance of congruent cognition categories becomes particularly noticeable in service transaction processes where both parties, service provider and customer, perform the service in collaboration. Incongruent cognition patterns result in cognitive distance[39] which, in turn, produces uncertainty and opportunism between the interacting parties (Noteboom 1992; Noteboom 1999). In order to diminish cognitive distance in a service transaction and to ensure a successful service co-production between the service operator and the customer, cognitive structures have to be aligned and adjusted to one another (Noteboom 1992; Noteboom 2000).

3.4 Transaction costs in the service blueprint

An alignment of processes requires a documentation of the process structures beforehand so that relevant points in the process/es can be identified and analyzed with regard to adjustment

35 Cognitive scientists dealing with the insights of neuronal groups, for instance, in individual and organizational learning processes are e.g. Edelmann (1987; 1992), Damasio (1995), Cook and Yanow (1996).

36 The notion of cognition in economics originates from the work of Hayek (1937).

37 In sociology, the phenomenon that cognition arises from interaction of people with their environment is termed "symbolic interactionism", introduced by Mead (1934).

38 The idea of embedded cognition arising from interaction with the environment can be traced back to the works of Vygotsky (1962), Piaget (1970; 1974).

39 There is a need for a trade-off between cognitive distance and cognitive proximity. Whereas cognitive distance is to some extent necessary to stimulate variety and novelty, cognitive proximity is needed to ensure a basic foundation of mutual understanding and agreement (Noteboom 1999).

potential. Such documentation can be realized with the service blueprint (see Figure 3-1 below).

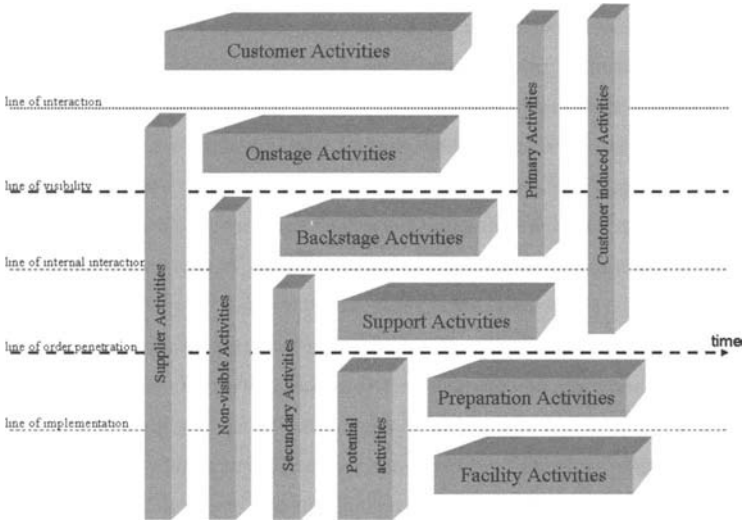

Figure 3-1: Activities in the service blueprint (source according to: (Kleinaltenkamp 1999)

Since all activities are differentiated according to their customer proximity, latent sources of evolving cognitive distance can be detected and it is possible to analyze which parts of the process cause what types of transaction costs. As delineated earlier, dynamic transaction costs primarily arise through the acquisition of capabilities that the service provider does not dispose of when needed, through the acquisition of information to operate the process and through necessary coordination arrangements of possible process interfaces as well as learning procedures. Fließ (2001) states that dynamic transaction costs are mainly caused by activities on the line of interaction, i.e. the onstage activities and by support activities. With the objective of a more general view on the blueprint activities, the share of dynamic transaction costs increases with higher dependence on and proximity to customer influence. Those activities that are more affected by customer actions and co-production behavior are subject to a higher uncertainty feature – or more structural and radical uncertainty – which is implicit in customer co-production.

Activities on the line of interaction that take place in direct contact with the customer are more likely to entail structural and radical uncertainty. This is because at a close interface

with the customer, customer contact employees might be confronted with new and unexpected customer actions and information and find they do not have the means to respond to it. In order to avoid an interruption of the service process and to operate the service production, they have to acquire new information and learn how to apply it. Coordination arrangements with other company units might have to be met so that the customer or the customer resources can be processed further.

The support activities which assist and facilitate the further continuation of the customer integration process are also not autonomously planned by the service provider but activated by the customer and the integration of the external resource factors. The support activities, too, are part of the primary activities comprising the combination of the internal and external resource factors of the service company. Therefore, they deal with the same conditions as the onstage activities in terms of information supply and coordination requirements as well as the necessity of learning, which causes dynamic transaction costs.

Backstage, preparation, and facility activities, on the contrary, are predominantly originators of static transaction costs[40]. Here, activities mainly face parametric or structural uncertainties and determine planning of the employment of integration tools and the available institutions (Fließ 2001). For the most part, transaction costs within those activities are caused by internal management and coordination arrangements. Backstage activities are often carried out by the contact employee and can be considered to be in a transitional phase until they are handed over to the support activities where the actual integration with internal resource factors takes place. Thus, no formative or constitutive activity concerning the further course of events of the customer integration process is taking place in this sphere; as a result, there is not much learning involved either. For that reason, transaction costs in the sphere of backstage activities can be considered as mainly static.

Preparation and facility activities are concerned with preliminary planning arrangements as well as with the allocation of the service company's resource potential and the provision of the service system. Uncertainties here are parametric and can be anticipated – at least for the most part. For these reasons, there is not much learning involved in these spheres and transaction costs remain primarily static.

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[40] These static transaction costs can be considered as ex ante transaction costs (for more detail, see Fließ (2001)).

It is important to know which parts of the service process entail which kind of transaction costs and what kind of process coordination is relevant in different process stages. As the blueprint model reveals, many activities on the side of the service operator are somehow influenced by the customer process. Therefore, the construct of customer scripts may offer a useful approach to analyze the entity of a service transaction process. A combination of both models can help to identify critical process points and facilitates the reduction of transaction cost sources.

Even though scripts, given that they perfectly qualify as institutions (section 3.3.3), offer a valuable extension and completion for transaction cost theory (see also section 8.1.1), they, however, refer exclusively to the efficiency feature of the service transaction process. Fließ (2001), in her work, has particularly made the criticism that transaction cost theory fails to consider effectiveness. Given that TCE evolves out of coordination activities within the process, it relates only to efficiency aspects and disregards the output side.

On that topic, scripts do not advance the theory any further because they, too, are directed towards the process sequence and they apply to the chain of actions in a period of time as opposed to evaluating one particular outcome moment. However, the objective of service process management in any kind of organization always aims at achieving both efficiency and effectiveness (Ivens 2006). Hence, both objectives will be included in the context of this thesis, although the latter cannot be explained with the theoretical argument of TCE[41].

As a short recapitulation of the previous line of argument, it can be noted that a service production process is always characterized by customer integration. Hence, it does not exclusively relate to the supplier side of process activities and does not stop at the blueprint line of interaction which chapter two dealt with in detail. Customer integration requires coordinating activities and thus causes transaction costs for both sides, which chapter three has now dealt with.

[41] Ghosh and John (1999) have extended the traditional transaction cost analysis into a governance value analysis and thus try to address marketing strategy and reasons for effectiveness.

Consequently, it needs an additional chapter that is concerned with the customer side of the process so that the analysis of the 'tripartite entity' can be completed. The following chapter will therefore examine the customer process applying customer service scripts as an equivalent and a potential extension of the traditional blueprint. This way, the theoretical part of the thesis will fully cover all relevant parts of a service transaction process: the supplier side by way of a service blueprint (as explicated in chapter 2), the coordination and interaction between both parties by means of transaction cost theory (as described in this chapter 3), and the customer process side using the concept of customer service scripts (as will be shown in chapter 4).

4 Customer processes

This chapter deals with the "other side" of the service transaction process and challenges the structure of a service blueprint counterpart. The previous discussion has merely referred to the supplier side of the service process (chapter 2) as well as the need for coordination activities between both sides which gives rise to transaction costs (chapter 3). Therefore, the customer process will now be treated. In that context, cognitive structures will be examined. Even though the thesis is dominated by a business-to-business paradigm which will represent the core of the empirical study later on, the cognitive structures primarily relating to individuals can still be applied. Customer processes can then be abstracted from the cognitive construct that originally refers to an individual. In order to understand the functionality and transfer it to a broader context, a basic understanding of the cognitive construct is essential[42]. Hence, the chapter first provides a general idea of the understanding of customer processes and relates them to customer performance. After delivering the theoretical basics for cognitive models, scripts as well as mental models will be explained and further relevant script-related constructs will be presented.

4.1 A description of the customer process

4.1.1 The service customer

From a macro-perspective, a customer[43] represents the potential market element on the demand side of the market and is characterized by exchanging money and commodity/service with the supplier (Simon 1981). Depending on the purpose, this definition can include potential customers as well, i.e. those persons who might be interested but have not made a purchase yet. In service process design for instance, potential customers as a possible target group may play a very important role.

The term "customer" can be traced back to its Franco-Latin roots from the words "con" and "suere" identifying a twofold connotation: a habit, as well as making something one's own (Webster 1998). From this clue the following implications can be made: on the one hand a

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42 For a more detailed explanation of scripts in organizational contexts, see also Gioia and Poole (1984), Noteboom (1992; 2000; 2004).

43 The term customer as well as the terms "consumer" and "client" will all be used with the same intention of declaration. The phrase "consumer", if traced back to the origin of the word, may imply a passive production role and thus, might just refer to the consumption of a service. But the author points out that within the scope of the thesis the term is to be understood in the same sense as the customer and client, involving the role of a co-producer in the service production process.

customer is someone who appropriates a commodity or a service by purchasing and paying for it respectively. On the other hand being a customer refers to regularity or a repeated purchase which insinuates a relationship between the supplier and the customer. The understanding of the customer[44] can be differentiated by two key elements, the purchase and the usage of a purchase. However, this understanding is not applicable to service customers.

Service customers, when they make the purchase, inevitably represent the user as well[45], since they can be considered as being part of the production process or contributing to it. Unlike outcome consumption of the traditional customer of a physical product, the service customer does not only consume the outcome of a production process but consumes and participates in the process. This aspect reveals a different aspect compared to the initial suppositions: The service customer does not only make a purchase as a monetary exchange. But he/she gets involved as a participating customer, is integrated in the production process of the service and partakes in the exchange actively. The initially assumed situation of an exchange dealt with a customer who delivers money to pay the purchase that he gets from the supplier in exchange. Whereas, the service customer delivers money and his own resources or activity (Chase and Tansik 1983). Since, at the same time, the service supplier is the one who integrates the customer('s resources) in the production process, the service customer is no longer to be seen as the supplier's counterpart but can rather be considered as part of the supplier's organization (Katz and Kahn 1966).

4.1.2 The alleged customer process

As shown before (section 2.4 and 2.5), most service process models, among them the service blueprint, lack the customer side of the service process. Customer processes can be defined in different ways depending on the perspective. Taking a view dominated by the service company, Johnston (1999, p. 104) defines it as "the part of the front office that delivers service to the customer". This definition includes personal and direct interaction, as for instance a face-to-face with an accountant, but also personal and indirect, for example discussing matters of the tax return via telephone, or non-personal like a customer interacting with the service system equipment, e.g. with an ATM machine. Even though this definition

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44 Apart from that, customers can be differentiated into private or industrial buyers, as well as into individual buyers and buying centres.

45 As the customer can be considered as the service user, Fließ (2006) with reference to Lovelock and Wirtz (2004) points out that service clients also evaluate the service process based on the costs that evolve for acquiring and making use of the service.

claims to be concerned with the customer side, it deals in fact with the process activities of the service company or alternatively the service employees. Speaking in blueprint-terms, it regards the "customer process" as onstage activities rather than looking beyond the line of interaction (see section 2.5). Likewise, the customer process is sometimes reduced to a set of "well-developed rules and established guidelines...(that)...define the activities of clients and the time they must spend in the production of the service" (Mills and Morris 1986, p. 727). This view communicates a very static image of service performance and does not take the customer as an individual person into account. Equally, it does not adopt the customer's viewpoint but rather imposes the service provider's view and expectation on the customer.

Albrecht (1988) tries to approach the customer view point with his "service cycle" concept. By identifying the contact points as the moments of truth, that concept is similar to Stauss' concept of the customer path (Stauss 1995). It highlights the aspect of customer experience rather than going into detail regarding the co-production and the customer's co-performing activities in the service process. Another approach focuses on customer-processing as an operation, i.e. the processing of the customer that is managed by the service (Morris and Johnston 1987). Customer-processing may then become a specified account for the number of customers a service unit is able to process (Silvestro, Fitzgerald et al. 1992) or in which way customers can be processed by the service system (Johnston 1987). In this sense, customer-processing may refer to service situations where customer presence is required, i.e. the customer is virtually processed as a person, or resources and information of the customer is processed. Whereas the former is typical for personal services like health care, tourism or cosmetics for instance, the two latter may be exemplified by a parcel service and an insurance service respectively (Haksever, Render et al. 2000). Yet, in many service situations several of the above are being processed in order to achieve the service outcome. The example of an airline service shows that the customer as a person is processed in terms of his/her travel, customer resources are processed when the luggage is checked in and transported to the destination and eventually customer information is processed when the passenger's flight and personal data are checked and verified at the check-in.

4.1.3 Characteristics of the customer process

Characterizing a service process as an activity sequence from the client's angle shows the way the customer makes use of it and interacts with the service operations (Kullven and Mattson

1994). This approach, accentuating the customer's experience as a co-producer, places the necessary emphasis on the aspect of the co-creation of value between customers and service companies and, as Prahalad & Ramaswamy verbalize it, "the co-creation experience of the consumer becomes the very basis of value" (2004, p. 5). It leads to a more appropriate and thought-provoking definition of the 'customer process': The customer process is represented by "those activities or part-processes that the customer participates in either passively or actively by carrying out certain activities" (Edvardsson 1997, p.34).

Acknowledging the fact that due to his/her participation the client affects the service outcome, i.e. quality and added value, the service provider's duty is to design service processes that are easy to learn for the customer. If participation is made easy for the customer, co-production will be more successful, fewer mistakes will be produced and a higher process quality can be achieved (Edvardsson 1997). At the same time, transaction costs will be low due to less need of coordination between the customer and the supplier. That means, the customer needs an image of the service process when entering the service situation. Having an image and a service script respectively ensures that the customer will be able to follow the process path and cope better with the co-producing activities he/she carries out. As Noteboom (2004, p. 13) phrases it, "although it is clear that a single, deterministic script does not suffice as a full model of competence, it can form an important building block". Thus, the customer process or alternatively the customer's process behavior is based on the customer's script. When designing the process, the service provider has to take into account that the process must be practical and comprehensible from the customer's viewpoint so that he/she can easily follow (Edvardsson 1997).

The entire service process can be grouped into activities carried out by the service staff, by machines and by the co-creating customer as well as the customer's resources. Whereas the former two are in the service provider's control, the customer has the power over his/her part of the process. This process does not only refer to the customer as an individual's behavior but it also relates to all activities on the customer side and includes all external resources such as machines and equipment of the customer company as well as direct customer information. However, the service provider can try to influence the customer process: The scope of activities that is transferred to the customer depends on the service provider's initial process design. Furthermore, the service provider can try to shape the customer process, i.e. the customer's script, by means of the process design.

Recapitulatory, it can be stated that first, the customer process is a part of the total service process. Second, the customer process represents those activities that are carried out by the customer, also comprising all other external customer resources; these activities therefore signify the customer's co-producing behavior throughout the service process. And third, the customer process is based on an underlying structure, best grasped with the customer's service script.

4.2 Service Customer Performance

Despite the heading of the section it is of crucial relevance to understand that service customer performance within the context of the customer process does not only relate to the customer as an individual. On the contrary, the most important aspect is that the customer represents only one case of external resource factors that need to be integrated into the service process. Then, even though other external resource factors such as customer equipment or customer information do not have scripts of their own, they are again provided by individuals in the customer company. For that reason, all external resources vitally form part of the customer script and can thus be included into service customer performance.

The term "service customer performance" first used by Mills & Morris (1986) describes the performance or activities that a service customer is supplying in order to achieve a specified service outcome from and with the service provider. Here, as mentioned above, customer performance does not exclusively refer to the person of the customer but also to all other external resources that are supplied by the customer company.

It is true that the service script, as the cognitive structure that the customer process is based on, is attributed to the person. Yet, even if other external resources, like machines – or other objects – and environmental conditions in the customer company, do not possess scripts of their own, they are still provided by individuals and can therefore be considered as a key element of the customer process performance.

As a result, service customer performance affects the overall performance of the service company (Barnard 1948; Parsons 1956; Lovelock and Young 1979; Bowen and Jones 1986). Service customers can consequently have an impact on the amelioration or deterioration of the company performance (Mills, Chase et al. 1983). Unlike a buyer of physical goods, the

service customer is characterized by integration, i.e. integration of resources such as the equipment and information of the customer company, as well as mental, physical and emotional process activities (Lovelock and Young 1979; Silpakit and Fisk 1985; Grönroos 1990; Kleinaltenkamp 1997; Risch and Schultz 2000). According to the notion of performance accomplishment, the customer performance in terms of integration can be understood under two aspects: with respect to the outcome or with respect to the process. The former refers to a customer-sided transactional performance. The latter, on the contrary, refers to the customer-sided interactional performance which requires the need of interaction coordination and thus causes transaction costs as explained in chapter 3. Kelley, Donnelly & Skinner (1990) differentiate customer contributions into "technical" – referring to the exactly measurable service features – and "functional quality" – referring to the purposive features and perceived standards (see also Gnoth 1994). That implies that the customer contributes instrumental actions like delivering information or manpower on the one hand and social actions like the client's manner, appearance and attitude towards performance on the other hand. Fundamentally, every service production involves an instrumental action at least in terms of transferring information, whereas a social action is not always required, as for instance a customer using an ATM.

Thus, service customer performance emerges from the client's behavior[46] in terms of his/her activity accomplishment. Activities in this context comprise the individuals in the customer company who are performing these activities as well as all objects that the customer needs in order to carry out the activities, and environmental conditions necessary for supplying equipment in a required form, for example. Within this context, it has to be pointed out that the integration of resource factors in a service production process can occur in different scenarios: depending on the type of the service process and the contractual agreements between the client and the service provider, resource integration can be differentiated in terms of a time-related and a place-related viewpoint (see also section 2.2, Figure 2-2 in particular). Firstly, the service provider's resources might be put at the client's disposal on a permanent or only on a temporary basis. An example of permanent resource integration could be a monitoring device that a facility managing company sets up in the client company to keep the customer building under surveillance. On the other hand, dispatching a team of consultants

[46] The term behavior in this context is not to be confused with 'consumer behavior' which is more concerned with purchasing behavior and buying decisions, evolution of customer needs and purchasing preferences, acquiring information and so on. Even though those issues may have an impact on the service customer performance, they are not congruent subjects.

into the client company would typify temporary resource integration. Yet, in both cases, the client company would then serve as the main location where the integration of resource factors takes place. Also, in both cases, the service customer performance has significant impact on the accomplishment of the service activities: the client, for instance, needs to provide sufficient access and workspace for the consultants to secure the service performance. On the other hand, the monitoring device of the facility manager, for example, can only be of use if the customer makes sure it is always accessible and that employees are treating it carefully.

Secondly, the resources of the customer company might remain in the supplier's company for a certain period of time. This could be the case if a pharmaceutical manufacturer has developed new pills and leaves them with an external packaging design company to have adequate packaging developed. Thirdly, resource integration can occur in a virtual way. If both the customer company and the service providing company interact and produce the service via electronic sources, resource factors mainly in the form of information are integrated at both ends. The case used in the empirical part of the thesis delivers a suitable illustration for virtual service production: here, the security provider monitors movements and access to the client's internet firewall server via electronic tracking. On the whole, all scenarios show that even though resource factor integration can occur in different ways, it is always affected by the service customer performance.

The service customer performance is based on the customer's willingness (Humphrey and Ashforth 1994) and ability (Wolfe, Lennox et al. 1986). Both also influence the customer performance in terms of providing the resources in the right condition or providing the right conditions for delivering or making use of resources at all. If the service company, for instance, dispatches someone into the customer company for reasons of machine maintenance or repair and the machine is placed in a dark room without any light access, environmental conditions provided by the customer company are not optimal. In this case, the service staff of the providing company are not able to perform the service optimally. This example shows that the customer script also involves all external resources such as objects and their conditions; even though here, the customer as a person is not directly concerned, the script relates to the provision and the delivery of other external resources. Like the service provider, the customer needs an adequate potential or capability in order to contribute to an efficient and effective service production process. Accordingly, the overall quality of a service is determined by the

willingness and the various capabilities of both the service provider and the client before the service production process even starts.

4.2.1 Customer efficiency

In the service industry, customers are not only viewed as a demand repository. They also represent a source of productive capacity, as specified tasks may be assigned to the customer during service production. Two rival perspectives towards customer efficiency in service production can be identified. On the one hand, customers are considered as a negative influence on the firm because they create uncertainty in service operations. Another view is that customers are a potentially useful source of productive capacity. Therefore, customers may be seen as a source of disruption causing difficulties for service providers or they can be considered as a chance out of which a productive resource can be developed. Those two standpoints will be opposed in what follows.

4.2.1.1 The customer company as a source of uncertainty

As part of a service operation, customers represent a major source of uncertainty. Customers, being diverse and unpredictable, can restrict the potential efficiency of the service system by disrupting organizational routines and failing to comply with procedures (Danet 1981). Customer contributions can be delayed, insufficient or even missing entirely, which affects the costs and the time of the service operation as well as the tasks that have to be carried out by the service provider personnel (Zeithaml and Bitner 2000). As explained in the third chapter, coordination is necessary in order to guide customer contributions, which in turn causes transaction costs.

The actions and reactions of customers may often show inconsistencies. Therefore several authors (Chase 1978; Chase and Tansik 1983), representing an operations management viewpoint, claim that the presence of the customer is responsible for constraining the efficiency of the service system. The uncertainties caused by customers imply that service settings that involve a higher level of co-production are more difficult to control than those that do not. It is therefore argued that the efficiency of service operations can be improved if the amount of customer participation is restricted or if service processes are standardized and automatized.

Those authors identify various areas where customer participation can affect the service provider's efficiency (Fließ and Kleinaltenkamp 2004):

- The quality of customer contribution has a major influence on the efficiency and the productivity of the service provider (Kelley, Donnelly et al. 1990; Zeithaml and Bitner 2000). Here, customer contribution includes the client actions, the customer resource factors such as equipment objects which form a fundamental part of the actions, and particularly the information given by the customer that the service operator depends on when trying to meet the customer's requirements.
- Sudden changes and volatility of customer demand can cause cost increases when ex post adjustment or modifications, for instance, have to be made (Mills and Morris 1986; Zeithaml and Bitner 2000).
- Delayed or insufficient customer actions and information as well as damaged resources, for instance, can lead to capacity problems and cause an overall delay in the service delivery (Bateson and Hoffmann 1999; Mudie and Cottam 1999).
- Delayed or insufficient customer contributions and information as well as damaged resources may result in cost increases as when, for instance, new or modified resource factors are required in addition (Danet 1981; Mudie and Cottam 1999).

Authors maintaining the perspective described above (Chase 1978; Chase 1981; Chase and Tansik 1983; Chase, Northcraft et al. 1984), suggest detaching the technical production system from environmental dynamics and customers as a source of disturbance (Thompson 1967). Isolating service operations from the disruptive impact of environmental factors, such as demand volatility or customer diversity, is the aim behind this idea. This way, the service production process is believed to turn out to be more independent from customer resource factors, thus operational efficiency could be increased. Here, it is important to differentiate between service operations of high and low customer interaction[47]. From the position illustrated here, service operations with high customer interaction generate inefficiency. Due to his/her participation in the production process, the customer can impact the process time and the outcome, for example. On the other hand, service operations with low customer interaction imply a lower impact of the customer on the service operation. Detaching the customer from the service production process offers opportunities for increased efficiency because the customer's potential to disturb the production process is reduced (Chase,

[47] For more detail, see also Fließ (2006), pp. 73 – 81.

Northcraft et al. 1984). That viewpoint aims at preventing customers from constraining the potential efficiency of the service operation.

Yet this perspective is mitigated by Tansik's (1990) argument for a more balanced service system design with regards to customer participation. It is pointed out that stressing an efficient manufacturing orientation in service production bears the risk of alienating the customer. Benefits like additional sales opportunities, for instance, may be a reason for including the customer into the service system or even promoting a customer-driven production system. Besides, this approach ignores the wants of the client, i.e. the marketing postulates. In some cases the customer may want to participate in service production in order to receive a more customized outcome (Engelhardt, Kleinaltenkamp et al. 1993) or just because the customer wants to feel more included in the service process (Zeithaml and Bitner 2000). Other customers might prefer to leave all tasks and decisions to the service provider and do not want to be bothered with participation due to lack of willingness, ability or time (Collier 1987).

The author disagrees on the view of the customer as a mere source of disturbance as outlined above. Since customers necessarily form part of the service operation and customer and service system are inevitably interwoven with each other, they must be considered as a valuable resource of the service provider. If integrated and "managed" in the right way, they can enhance the productivity and efficiency of the service provider successfully, as will be shown in what follows.

4.2.1.2 The customer as a resource

Instead of regarding the customer company as a threat and a source of uncertainty, the client's presence in service operations can be seen as a chance of additional resources. The service provider has to ensure that co-production takes place the right way, that is, in the time, place and manner of participation needed to operate the service process efficiently and at the same time give sufficient consideration to customer wants (Larsson and Bowen 1989). Part of the service production can be transferred to the customer and is expressed as service consumerization (Sasser, Olsen et al. 1978). Enlarging the amount of client participation in service production can benefit cost savings and increase productivity. In that sense, customers

can be treated as partial employees and other resource factors of the customer company such as equipment, gear and tools can partly be profited from also.

As customers take on an increasing number of tasks in service operations, the labor requirements of the service provider sink. It is therefore proposed that the employees' manpower in the service operation be replaced by the customer's manpower, which results in labor cost savings (Lovelock and Young 1979; Eiglier and Langeard 1987). Clients adopting a more active role in the service production and delivery process consequently take some of the tasks from the service provider (Lovelock and Young 1979). Service production therefore experiences a shift from the service organization to the customer.

According to Eiglier and Langeard (Eiglier and Langeard 1987), a service operation consists of three resource categories: firstly, the service company staff and particularly the customer contact personnel, secondly, the physical and technical resources (corresponding to the elements of the service system (Edvardsson 1997) or the service provider's potential (Fließ and Kleinaltenkamp 2004)) and the customer (including all other customer resource factors) as the third category. During service production, all of the three categories are employed. The customer and all customer resources such as equipment are regarded as an external production resource factor within the service provider's production system (Fließ and Kleinaltenkamp 2004) and therefore represent a hidden resource. Instead of merely working with the service personnel, clients can also be used to provide service. Clients carrying out tasks efficiently can result in improving productivity in service operations (Mills, Chase et al. 1983). Another important benefit can be gained from the idea of co-production: customers provide process inputs at exactly that moment when the input is required. Consequently, the service capacity is much more flexible and complies directly with the demand whereas usually capacity is rather rigid and inflexible (Fitzsimmons and Sullivan 1982). Making use of customers as dynamic labor input factors can lead to a higher achievement of capacity. Also, service providers can make use of other customer resources that are implied by customer resource integration. That is, sometimes the materials belonging to the customer company, such as equipment, or customer information and tools might be co-used by the service provider within the context of the particular service process but possibly even in the context of other service processes as well.

The idea that clients deliver inputs into the service operation and therefore, from the service provider's perspective, act as external resource factors has resulted in the perception of

customers not only as co-producers[48] but as "partial employees" (Allport 1933; Barnard 1948; Parsons 1956; Lovelock and Young 1979; Bowen 1986; Mills and Morris 1986). This term implies even more strongly that the customer represents a resource factor and therefore part of the service company. Activities that are usually performed by service staff can now be carried out by customers. If they are able to perform these tasks even more efficiently than the employees, higher productivity can be achieved in service operations. When 'recruited' as partial employees, customers cannot all be expected to respond in the same way. Just as not all employees show the same motivation, so customers differ in their degree of willingness to participate in service production. Some clients favour an active over a passive role because they want to experience the service more dynamically and vigorously or because they perceive a higher level of control over the service process (Bateson 1983). Others might even reject the idea of participating by acting as a partial employee at all which may cause risks to the initiative of increasing the share of co-production.

Employees in service organizations can be controlled through institutional mechanisms. These can be hierarchical authority mechanisms, i.e. formal constraints such as rules, working contracts or laws (Coase 1988). But those instruments do not apply to clients. Here, either informal constraints such as norms of behavior or conventions support the client's performance as for instance the polite answering of questions and giving information to the contact employee. Another informal institution that the client's performance is built on may be the customer script according to which he/she acts in the service process. Yet, there is no formal assurance that the customer will perform in accordance to the service operation requirements. Therefore, the development of the customer script is in the service provider's interest. From the perspective of the service provider, the customer script may act as a surrogate working instruction for the client as co-producer.

4.2.2 Managing customer performance

Service managers are constantly challenged to ensure their customers' performance co-production. Customer performance in service production may be described as behavior

[48] Bowen (1986) distinguishes between customers as "co-producers" and "sole producers". Whereas the first term paraphrases the collaboration of service employee and client during service production, the second expression refers to a situation where no collaboration is taking place and the client acts on his/her own. The example of a customer using an ATM machine illustrates the sole customer. Yet, the machine is provided by the bank and the client is indirectly given instructions by the machine in place of an employee. Thus, that situation can also be considered as a co-producing operation. The author will therefore refrain from using the term "sole producer" at all.

toward goal accomplishment (Campbell and Pritchard 1976). It can refer to the production of the outcome itself or to the achievement of a task within a certain time. When customers are unable to perform the task and to comply with the requirements of the service process, the service operation is disrupted or malfunctions (Eiglier and Langeard 1977). Therefore service companies persistently have to manage their clients' performance during service production (Mills, Chase et al. 1983) just as they manage their employees; otherwise they may face severe consequences due to the adversely affected service production (Groenroos 1980). With a growing share of required customer participation, this need to manage customer performance increases as higher customer participation entails more coordination activities and thus causes higher transaction costs.

Strategies from human resource approaches to managing employees can be adopted to manage customer behavior in service production. Like employees, customers also need to be motivated to contribute to the service process (Mills, Chase et al. 1983). Performance in working environments can be determined by three variables: motivation[49], abilities[50], and role[51] perceptions (Vroom 1964; Cummings and Schwab 1973; Porter and Lawler 1986). In order to achieve the expected level of customer performance, the conditions to elicit and influence the customer's motivation, ability and role clarity need to be found out by the service provider[52]. Customers, for instance, who are expected to perform tasks at an ATM machine, must be convinced of the self-service role and must be motivated to perform, i.e. they have to be sure that there is some reward for the self-service such as time-savings. At the same time they must possess the ability to operate the machine and understand the instructions on the screen. This can be achieved, for instance, through service staff, who introduce clients to the new system and explain to them how to use the machine, or through a brochure distributed to all clients beforehand. The performance quality of the client fundamentally depends on these conditions.

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49 Motivation is the individual's desire to demonstrate a certain behavior. It reflects the willingness to raise effort to achieve a goal (see e.g. Heckhausen (1989) for a thorough discussion of motivation).

50 Ability is a person's capability to perform certain tasks (see e.g. Nicholls 1984)

51 A role refers to a set of behaviors appropriate for a certain situation.

52 For a more detailed elaboration of customer ability and volition with reference to the service process, see Fließ (2006), pp. 78- 81.

4.3 Theoretical basics for the understanding of cognitive models

4.3.1 Customer learning

Memorizing, recalling and eventually performing a script implies a kind of customer learning procedure. It is therefore important for the service provider to be aware of the customer learning procedure and incorporate it into the overall management process of the service company. For that reason, after a definition of learning is provided, this section outlines those basic learning theories that are relevant to understand service scripts.

4.3.1.1 Basics of learning theory

Unlike commonly assumed, learning does not only involve the acquisition of knowledge and fundamental skills like linguistics, reading and arithmetic. Scientifically, those cognitive processes as a category of memorizing information represent just a small section of a considerably wider range of definitions. Most learning theories are concerned with the emergence and the development of human behavior patterns and therefore outreach the mere process of acquiring and memorizing knowledge.

Yet, learning does not necessarily involve a change of behavior. It rather refers to the possibility or the increased probability that learning might entail a change in the individual's behavior (Hofstätter 1957). At the same time, not all modified behavior is based on a learning process since it can also be evoked by situational factors such as an individual's physical condition, a disease, alcohol etc. Therefore, learning only occurs if the change of behavior is induced by experiences, practices and/or insights.

Learning can occur in several ways. An individual is able to learn intentionally, like a student learning for an exam, or incidentally, like a child touching the hot plate of a stove realizes that he/she may burn her skin. Equally learning can occur perceptually, as for instance a child learning different colors, or physically, as for example a person learning to play tennis. Accordingly, there is a wide range of learning theories trying to describe, analyze and explain a diversity of learning phenomena and the processes they are based on.

Learning theories are regarded as a very advanced area in social sciences. However, there is no such thing like an overall-theory; instead there is a variety of theories approaching different phenomena that mutually complement one another. The most relevant theories to

understand customer learning processes as well as customer scripts are "operant conditioning[53]" (Skinner 1957; Skinner 1964) and "observational learning", also called "vicarious" or "social learning" (Bandura 1977). Both approaches are characterized by the notion of interaction.

In general, the fundamental idea of learning is based on "stimulus" and "response". This "S-R-model" model belongs to the behavioral learning theories and describes a linear interrelation between stimuli (S) and response (R). A stimulus can be regarded as an impulse or an event that activates the individual. Yet, the S-R-model does not shed light on the internal information processing procedures of the individual considering those as "black box" (Thorndyke 1977). The individual has learned if he/she reacts to a specific stimulus in a specific way more frequently than before. If the individual reacts to different stimuli with the same behavior or equally he/she reacts to the identical stimulus differently each time, then the individual has not learned (Kroeber-Riel and Weinberg 1999). However, in reality these stimulus-response-interrelations do not fully exclude each other but can rather be found on a continuum[54].

Operant conditioning represents the key fundament of the behavioral learning theories and is also named "learning through success". In this context, learning is considered as an individual's active behavior, i.e. the individual's behavior is characterized and maintained by the consequences (success) of the behavior. This basic rule is also called "law of effect" (Herrnstein 1970) and makes two statements: Firstly, if an individual experiences a positive enhancement through a specific behavior, it is more likely that this pattern of behavior will be used again. Secondly, if a negative enhancement (aversive stimulus) is experienced due to a specific behavior, it is less likely that this pattern of behavior will be applied in the future (Bandura 1977).

Another important aspect of this learning theory includes unlearning and relearning. Whereas unlearning focuses on abandoning of hitherto attitudes, knowledge and behavior patterns, re-learning is concerned with the acquisition of attitudes, knowledge or activities that differ completely from the current ones (e.g. Hopfield, Feinstein et al. 1983). In case the new

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53 Term-wise operant and classical conditioning can be differentiated (e.g. Weiss (1972)). Yet, for the purpose of this approach this differentiation is not of relevance and shall therefore be neglected.

54 Stimuli can be generalized "stimulus-generalization" or discriminated "stimulus-discrimination": see thereto e.g. Dougherty and Lewis (1991).

attitudes, knowledge or behavior conflict with the old ones, the old ones first have to be unlearned to successfully learn the new ones (Hedberg 1981).

The operant conditioning approach is often criticised for its mechanical interrelation of stimulus-response-relationship. The social or observational learning approach shows that individuals do not only learn through external manipulation, but also through the combination or the reassessment of already existing cognitive elements, i.e. learning by intention and comprehension. Individuals when learning do not only acquire behavioral elements or reactions, but they develop their own elements of knowledge or cognitions that can be applied to other similar situations or used in a modified way. Thus, inner models, expectations and evaluations regarding the learning object are acquired in the context of cognitive learning (Bandura 1977; Rosenstock, Strecher et al. 1988).

Apart from their own experience, individuals can learn through observation[55] and imitation (Bandura 1977), as well, which is considered as "second-hand learning". Cognition-theoretic notions are combined with social aspects; it is therefore described as a social-cognitive learning theory. Learning through observation, i.e. learning based on experiences of others, can often benefit the individual because it is more cost-effective, more efficient and faster than so called "trial-and-error"-procedures (Lent van and Laird 2001). Existing behavior patterns can be modified and complex social, affective, as well as cognitive and psycho-motor behavior patterns can be acquired additionally.

In this context, learning does not necessarily involve an adoption of the behavior patterns but rather a predisposition of behavior or a latent behavior. Social-cognitive learning theories clearly differentiate between learning as an acquisition of behavior patterns and behavior as action, i.e. applying the learned patterns by carrying out real actions. When learning, the individual merely memorizes those stimuli in the long-term memory that are perceived during the phase of acquisition. The learning experiences are then realized in the phase of implementation if enhanced through adequate rewards or incentives. The result from social learning in an actual change of behavior depends on the observer's attention, the memory, the ability to imitate and realize the behavior and the motivation to carry out the behavior pattern. As a result, it can be stated that observational learning occurs in at least two stages: First a

[55] In this context, the influence of fellow customers, particularly in B2C-services, can play a major role. In B2B-services, fellow customers as an influential factor are of little relevance as they may merely have an affect in terms of word-to-mouth reputation matters.

behavior pattern is learned and memorized; later on it is performed as real behavior provided that the situation is appropriate to do so (Vermeulen and Barkema 2001) .

The theory of observational learning can be particularly consulted to explain economic socialisation processes of consumers. Consumer socialisation is focused on an individual's integration in the consumer culture of a society. The individual learns to play his/her role as a consumer and develops a normative system of balance. Thus, children[56] learn consumer behavior from their parents in a rather early stage, regarding their parents as models. The parents act as socialisation agents just as coeval friends. But adults pass through socialisation processes, as well. Through social learning they adopt economic roles, for instance as a new employee in a company, and new or modified customer roles (Lent van and Laird 2001).

4.3.1.2 Customer learning: a definition

Based on the understanding of learning and the previous theoretical considerations, customer learning – in a broader sense – can be described as a modified predisposition of the customer's behavior. That mainly includes any kind of learning and learning experiences in the private environment of the customer. Furthermore, it comprises situations in which the customer learns, for instance, that the competitor performs a better service and consequently changes to another service provider. Giving a more specified definition of customer learning means that customer learning can be understood as a modification of the customer's behavioral predisposition that is guided from the degree of service customer performance aimed by the service provider. Yet, such customer learning only occurs if the customer has a particular interest and the motivation to learn at all (Noels 2001).

4.3.1.3 Script learning

Script learning as a cognitive construct can be classified as information-processing-theories. Those theories are basically geared to human thinking processes seeking to elucidate cognitive processes and can therefore be regarded as a specification of cognitive-oriented learning theories (Winn and Snyder 1996).

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[56] See thereto for example: Roedder-John (1999).

Cognitive processes are processes in the mind and the thoughts of the individual that are aimed at deliberately controlling and managing behavior. Like a computer, the individual is considered as an information-processing system. Accordingly, behavior can be described through a sequence of elements of information-processing processes including information gathering, processing and memorizing. Those information processes depend on the previous knowledge of a person. Due to their experience adults, in particular, possess a great amount of previous knowledge which is very important for learning. Scripts are used to recognize situations and refer to top-down cognitive or concept-driven processing, i.e. the influence of concepts, expectations and memory to conclude appropriate behavior (Matlin 1998). These conceptual structures in the individual's memory are constantly adapted to include other or new experience. This aspect explicates why individual scripts for the same event show differences in certain facets. Four major forms can be identified in script learning: Firstly, script enrichment which refers to the addition or deletion of concepts in memory. Secondly, script tuning that indicates evolutionary changes in the application of scripts to interpret data. Thirdly, script accretion referring to a gradual accumulation of information and fourthly, script restructuring which implies the creation of new knowledge structures (Shute 1996; Vosniadou 1996; Matlin 1998).

Based on the existence of a hierarchy of memory structures, script theory provides exclusive access to entire sets of knowledge in memory. It can be explained with respect to selective attention, information encoding and retrieval and information processing. Equally, script theory accentuates the relational context as the basic significance. Applying consequences of learning theory – or alternatively basic cognition theory – to script research implies that experience plays a major role in eliciting scripts. Provided that individuals have been exposed to a certain situation before, due to his/her experience the individual will evolve script formation in long-term memory over time (Speck, Schumann et al. 1988; Benjafield 1992).

4.3.2 Customer knowledge

Eventually from learning knowledge will evolve. Knowledge is a term commonly used in everyday-language and typically refers to three major contexts. First, it can capture a state of knowing and be paraphrased with "knowing *about* something"; in this context it deals with being familiar with, being aware of, recognizing or apprehending facts, methods, techniques or principles. Second, knowledge can relate to a capability for action, i.e. an adequate

understanding of facts, methods, techniques or principles to apply them in order to create a result. This category refers to the "know *how*". Third, knowledge can also be used in the context of codified and accumulated facts, methods, techniques or principles, i.e. an articulated "body of knowledge" in the form of manuals, papers, books, computerized data files etc. When differentiating between data, information and knowledge (Krcmar 1997), data and information correspond to the third category. That means, whereas data and information[57] can exist self-contained and apart from persons, 'real' knowledge only evolves if the encoded "body of knowledge" is merged with an individual's memorized experience.

Regarding knowledge as much more capacious and profound than data or information, Davenport and Prusak (1998, p. 5) present a very comprehensive and enfolding definition: "Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incoporating new experiences and information. It originates and is applied in the minds of knowers...(and)...often becomes embedded ... in...routines, processes, practices, and norms". The reflections so far lead to two major perceptions of knowledge: knowledge in a person's internal state that results in this person's capacity for action and articulated knowledge that can be recorded. Therefore, it is reasonable to use the concepts of explicit, implicit and tacit as well as declarative and procedural knowledge, which partly overlap.

Explicit knowledge is articulated, formal and systematic knowledge, often represented for instance in text, tables or diagrams (Nonaka 1991). A customer for instance, who is required to fill out personal data in a customer questionnaire, likely possesses explicit knowledge about facts like his/her name, address, date of birth etc. Implicit knowledge has not been articulated yet, but it can be if it is elicited. This kind of knowledge is understood from observable behavior or performance (Nickols 2000). Supermarket shoppers, for example, most likely have implicit knowledge about the behavior on the fresh cheese counter; they know that they have to address to the cheese salesperson and give them their order, even though this knowledge is not articulated. Whereas tacit knowledge (Polanyi 1966) cannot be articulated, i.e. a person's knowledge exceeds what the person is able to verbalize. The supermarket shopper may recognize the salesperson's face who has served him/her at the last supermarket

[57] Data are regarded as an accumulation of linked data elements like figures, digits and numerics. If those data are of any use for the individual (the addressee or receiver of those data), they are understood as information Krcmar (1997).

visit; yet, the client is not capable of explaining how that is done. This kind of knowledge is based in the doing itself rather than in the description of how to do it.

Declarative knowledge, which is very similar to explicit knowledge, consists of *descriptions* of facts, methods and procedures. That means all declarative knowledge is explicit (Anderson 1976; Anderson 1995). A patient, for instance, reporting his/her disturbances to the physician can describe the kind and the location of the pain. Whereas declarative knowledge refers to the "know about", procedural knowledge refers to the "know how". Procedural knowledge shows itself *in the doing* of something and appears in motoric or manual, as well as in cognitive or mental skills (Anderson 1993). Therefore procedural knowledge can basically be viewed as tacit knowledge. Although a procedure can be described in terms of describing a task, step by step, drawing a process flowchart etc., these descriptions are only representations. While those descriptions of what one does or how one does it result in declarative knowledge, the description of an acitivity is still not the activitity itself (Nickols 2000), e.g. the declaration of how to ride a bicycle does not entail that someone is actually able to do it.

4.3.2.1 Managing customer knowledge

The key to manage customer performance is the knowledge and the expertise necessary of the client to produce the service. Often, service companies rely on their clients' knowledge. Therefore, they also need to provide knowledge to customers to ensure that they understand the nature of their task and possess the competency that is relevant for carrying out the task. Particularly for novel services, knowledge is a precondition for co-production. Many service companies, for instance, provide knowledge for their customers by means of brochures, instructional films or similar information material.

A novice client without any experience has a knowledge deficit with regards to the specific task that is required in the service process. However, even unexperienced clients can possess service knowledge based on their prior experience of similar service offers. With more experience, customers can soon become experts. The crucial difference between a novice and an expert customer is not only that the expert possesses more knowledge but primarily that the knowledge is better organized (Allwood 1986). A great amount and a good organization

of knowledge enable the customer to use the knowledge in a more effective way (McKeithen, Reitman et al. 1981).

Examining the influence of prior knowledge on cognitive tasks, Britton and Tesser (1982) found that prior knowledge affects performance in problem solving, learning and cognitive processing. They came to the conclusion that prior knowledge influences cognitive processing through scripts. Customer scripts are important because they represent the customers' knowledge of what to do for effective performance in service production (Larsson and Bowen 1989). Scripts as organized knowledge are also assumed to be used for expedited performance of tasks (Johannsen and Rouse 1979).

4.3.2.2 Customer expertise

As all individuals and as a result from learning, customers dispose of knowledge. Particularly for service providing companies, customer knowledge is an essential asset since it represents a source of customer value improvement. Service providers therefore deal with the management and the utilization of their customers' knowledge. Relevant customer knowledge can be related to a multiplicity of aspects as the range of service products, for example knowledge about the variety of airlines or differences in booking categories, or the efficacy of a particular service like a massage treatment; it can also include the wider service context and marketplace into which the service is being delivered (Rowley 2002). Those aspects would be considered the declarative and explicit knowledge of the customer. However, most important for the service performance is the customer's knowledge about the process sequence of the service involving the customer as an active part, i.e. here, consumer knowledge refers to the activities and the behavior of the client in person during the service performance. This kind of customer knowledge defines the consumer expertise.

Customer expertise can be differentiated into two dimensions, namely objective knowledge and subjective knowledge (Bettman and Park 1980; Park and Lessig 1981; Brucks 1985; Mattila and Wirtz 2001). Whereas objective knowledge is concerned with the actual information about the service product class and is stored in long-term memory, subjective knowledge – also called self-assessed knowledge – refers to the individual's perception of *how much* he/she knows about it (Wirtz and Mattila 2003). As it is harder to gain knowledge on some services than on others, customer knowledge shows discrepancies. It is, for instance,

more likely for a customer to have a higher knowledge about a shoe polishing service than about a dentist. Furthermore, customers' own knowledge assessment is not necessarily the same as the actual knowledge they possess of that particular service (Schacter 1983). A patient, for example, may assess his/her own knowledge about the dentist higher than the actual objective knowledge is. The discrepancy between objective and subjective knowledge is supposedly larger in the case of credence services, like medical services, because they are difficult to evaluate even after the service performance (Ekelund, Mixon et al. 1995).

The objective dimension of customer expertise can be interpreted as procedural knowledge, whereas the subjective dimension is rather understood as explicit knowledge because the customer is aware of his/her knowledge in a particular context. Even though in the actual service process the customer's actions are determined by his/her objective customer expertise, it can be assumed that the customer has internalized the service procedure to a higher extent with a stronger subjective customer expertise. Therefore, customer expertise has a strong impact on the customer service script and vice versa. Consequently, customer expertise is essential when the customer engages in co-creating the service.

Since scripts are defined as knowledge structures representing predetermined, stereotyped sequences of actions in well-known situations (Schank and Abelson 1977), they comprise both procedural as well as declarative knowledge. A customer may be able to explain when and why he/she needs to carry out the steps in a service situation, in which case he/she is reproducing a service provider's manual for instance with customer instructions or a brochure. This explicit knowledge equally displays the client's subjective expertise dimension. However, there may be elements in the service process the customer is able to carry out but not capable of describing or reasoning them when asked to. This implicit or as well tacit knowledge may diverge from the customer's subjective expertise dimension.

It becomes clear that all knowledge categories and expertise dimensions are relevant to comprehend and identify the customer service script. Depending on the service situation and the type of the service interaction, different aspects can be more or less prominent and form the script to a minor or major extent.

4.3.3 Schemata

Before consuming a service, the customer is likely to either have some experience with the service or some knowledge that can be related to the service in different aspects. Such knowledge endowing the customer with a representation of the service helps the customer to understand the service and use it in more efficient way.

Psychological theories try to elucidate human behavior by using behavioristic and cognitive approaches. The cognitive approach argues that the individual's mind possesses a mental representation that contains knowledge of a situation. That means such situation comprise all kinds of interactional events and so they also include service situations. Two models of knowledge representation that are very frequently used are cognitive scripts as well as cognitive maps (Eden, Jones et al. 1979). The latter one was developed on the basis of Kelly's (1955) theory of personal constructs. Cognitive maps try to trace how an individual employs beliefs and goals and the relationship between those in order to make sense of a situation. Whereas cognitive maps focus on beliefs, cognitive scripts focus on the series of events and actions, the sequence as well as the structure of those actions that define a situation. Considering the performance of the customer in the course of a service situation and the entire customer process, that can be seen as a temporal sequence of events, cognitive scripts seem to be a useful and relevant model of knowledge representation.

By introducing cognitive scripts, this chapter aims at drawing on cognitive scripts as a model of knowledge representation of the service production process from the customer's perspective. Service scripts can be utilized to analyze the customer process in a service setting. In order to understand the concept of scripts, it is necessary to explain them with regard to their correct psychological contextual background. Therefore it is essential to explicate the superordinate and more general category of knowledge representations, namely schemata.

4.3.3.1 The concept of schemata

The concept of schemata evolved in the first half of the twentieth cnetury and was to explain knowledge representation in memory. Although Piaget (1926) used schemata as a major theoretical construct to represent the knowledge system of children, Bartlett (1932) received credit for the development of the schema concept and was the leading thinktank for most

contemporary schema theorists. Researchers in various fields such as artificial intelligence (Minsky 1975), cognitive psychology (Rumelhart 1975), linguistics (Fillmore 1975), motor performance (Schmidt 1975) and cognitive-psychology-artificial-intelligence interdiscipline (Bobrow and Norman 1975; Schank and Abelson 1975) partly based their works on Bartlett when discussing schema theory. In between Bartlett (Bartlett 1932) and modern schema theorists the perspective in schema theory changed from empiricism to rationalism (Anderson 1977; Brewer and Nakamura 1984). A paradigm shift towards emphasis on empirical evidence paved the way for more rational and logical approaches.

Schema theory implies that in every field of human experience, the perception, comprehension or interpretation of stimuli involve an interaction of input with existing knowledge. The sensory information may be incomplete or ambiguous; the information already stored in the memory, i.e. prior knowledge, influences the expectations of the individual and helps to interpret new and existing input. A 'top-down' element of schema, i.e. the rationalist part, as well as a 'bottom-up' element, i.e. the empiricist part, can be differentiated (Anderson 1977; Rumelhart and Ortony 1977). In the following the conceptual development of schemata, as well as its characteristics and functions will be reviewed.

4.3.3.2 The development of the schema concept

Artificial Intelligence (AI) and psychological theories dealing with the function of the memory for text understanding represented the two major research streams in schema studies. In artificial intelligence, knowledge representations and elaborate structures were developed for complex tasks requiring 'top-down' processing; whereas for simple tasks data-driven analysis or 'bottom-up' processing sufficed. The computer metaphor was used to comprehend the flow of information – or information-processing – through various levels of memory in the human mind. The development of complex computer language and machines has considerably influenced the progress in schema theories resulting in frames (Kuipers 1975; Minsky 1975; Winograd 1975) and scripts (Schank 1975; Schank and Abelson 1977), for instance. Research in artificial intelligence developed the script concept to permit a computer understanding system to represent knowledge structures and to make inferences about common, everyday events (Schank 1980). People have scripts for familiar events; these scripts provide a knowledge structure to represent certain situations in memory and to understand those situations.

Bartlett's (1932) conducted a pathbreaking study in text comprehension, showing that schemata can explain why and when people remember stories. When being asked to reconstruct a story, individuals tend to use schemata to fill out gaps and make sense of the story. That research gave motivation to subsequent studies modelling knowledge structures for story comprehension in memory (Rumelhart 1975; e.g. Mandler and Johnson 1977; Rumelhart and Ortony 1977; Thorndyke 1977). These researchers tried to prove that text comprehension, encoding and memory retrieval are based on the activation and the employment of memory schemata. This way, schemata shed light on how events are structured, how event sequences are combined to form episodes and how entire stories are constructed from episode sequences.

4.3.3.3 Schema features

A schema is defined as "a cognitive structure that consists in part of the representation of some defined stimulus domain. Schemata contain general knowledge about that domain, including a specification of the relationship among its attributes as well as specific examples or instances of the stimulus domain" (Taylor and Crocker 1981, p. 102). Schemata are cognitive structures of a superior order hypothesized to form the basis of every aspect of human knowledge and skills. They exist for generalized concepts that underlie objects or situations. As part of their specifications, schemata serve a crucial role in providing a description of how old knowledge and new knowledge interact in perception, language, thought, and memory.

The major features of schemata are as follows (Rumelhart 1980; Rumelhart 1984):

1) Schemata contain variables holding constraining values. Once values have been assigned to the variables from environment, memory or by default, the schema is concretized. A schema for a tennis, for instance, holds slots for place, people, activities, equipment, and so on. The variable "place" consists of the value "tennis court", but it may offer optional values such as "indoor" or "outdoor.
2) One sub-schema can be embedded in another superior schema. A schema can be understood as consisting of a configuration of sub-schemata that correspond to the elements of the concept in question. Schemata are arranged in a hierarchical structure, i.e. chunks of knowledge about one subject are liked to chunks of knowledge about related subjects. Within the tennis schema, there is a subschema for "tennis racket".

On the other hand, the tennis schema may be part of a superior schema system of sports or ballgames.

3) Schemata represent knowledge at all levels of abstraction; the human memory system contains untold chunks of information. Schemata exist for simple objects such as knowledge about the shape of a table to more complex knowledge about the formation of a political institution.
4) Schemata embody knowledge rather than definitions. That knowledge is connected with generalizations derived from personal experience and learned facts.
5) Schemata are active processes because they alter with experience as a result of a continuous cognitive process.
6) Schemata serve as recognition tools. The individual tries to evaluate the data that is to be processed by how much the data matches an available schema.

4.3.3.4 Schema functions

Schemata form the fundament of cognition; the central function of schemata is to interpret objects, events or situations by using four main processes (Alba and Hasher 1983):

1) Selection: the selection of all incoming stimuli for representation,
2) Abstraction: the abstraction of the meaning of the perceived information,
3) Interpretation: the use of prior knowledge to support interpretation and understanding, and
4) Integration: the integration to store information in memory

The processes of selection, abstraction and integration of information that is acquired from the environment explain why information in memory can get easily lost or reduced. The processes of integration and interpretation help to frame the memory by adding references, lost details and relevant prior knowledge. At the same time, it helps to point out the tendency of memory to bias information.

Schematic processing underlies errors and loss of accuracy (Taylor and Crocker 1981). If a wrong schema is employed, it may lead to the consequence that a subsequent stimulus is forced into an inappropriate schema. On the other hand, a schema which is appropriately activated may be excessively applied to a stimulus which again can result in the assumption of incorrect information. For instance, if a person sees a green lawn with a net in the centre,

the person's schema for "tennis" could be activated. Further information may reveal that it is a volleyball field, in which case the "tennis" schema primarily assumed proved to be incorrect. As a consequence, the "volleyball" schema turns out to be the best fit and thus becomes the dominant and most active schema.

4.3.3.5 Types of schemata

Schema theory can provide a theoretical explanation of a multiplicity of phenomena in everyday memory. Schemata, as a set of knowledge structures, represent general knowledge about objects, actions, events and situations. Several researchers have suggested individual compilation of schemata to gain knowledge from a variety of areas.

There are schemata for objects (Rosch and Mervis 1975), such as the shape of a house or a chair, persons, stereotypes, and roles (Hamilton 1981; Taylor and Crocker 1981). Person schemata are arranged around particular characteristics of individuals, as "introvert", "extrovert" or around social or occupational roles like supervisor or doctor. Spatial scenarios (Goodman 1980; Brewer and Treyens 1981) may be arranged as schemata as for instance, a hospital or a gym schema. Schemata for specific kinds of events or experiences are organized around actions, such action sequences are called scripts (Schank and Abelson 1977; Nelson 1981). A widespread example, often used in literature, is the restaurant script.

The following discussion, as is this thesis, is dealing with scripts as an event schema. Subordinating scripts into the schema context helps to elucidate this cognitive construct. It will contribute to a better understanding of the role of scripts in service settings as a customer process basis and explain how they develop, how they are constructed and how they function.

4.4 Scripts

Scripts refer to organized knowledge of action and event sequences that are possibly routinized. The two following definitions might be best to grasp the script concept: "a script is an elaborate causal chain which provides world knowledge about an often experienced situation" (Schank 1975, p. 240) and "a script is a giant causal chain of conceptualizations that have been known to occur in that order many times before" (Schank 1976, p. 170). Those definitions point out that a script is a type of cognitive schema which is applied to a common event. Script "theory" assumes that knowledge about familiar and frequent situations is stored

as a coherent description of events expected to occur. As an event schema, scripts possess the characteristics of schemata. Therefore the similarity of characteristics between scripts and schemata is to examine.

Primarily, specific and idiosyncratic information is contained in the event structure; such information relates, for example, to possible actors, actions, locations, results of actions. Scripts, in particular, have entering conditions, often in form of a script-activating event, as well as reasons and important conceptualizations and set up roles and props. Like schemata, scripts contain variables. They are recognition tools in the sense that objects, roles or props may be implicitly referenced as if they had already been mentioned (Schank 1975). A restaurant script, for instance, assumes the presence of a waiter or a waitress, a menu, tables, chairs, food, a bill and other adequate objects.

The instantiation of variables in the script may be caused from memory or environmental stimuli. It saves the individual cognitive processing capacity, yet distortion can occur. In the restaurant example, the variable 'waiter' may, by default, adopt the value of a man in uniform. However, the waiter may turn out to be dressed in jeans and a shirt. In scripts, the subordinate levels are subsets of actions. Schank and Abelson (1977) called those action subsets "scenes". Thus, a restaurant script may be composed of various scenes relevant to entering, ordering, eating and paying. Scripts, akin to schemata, can be embedded in one another at different levels of abstraction. This means that higher level knowledge structures may be accessed without going into all the details. In the restaurant scipt, there may be a general sequence of events involved in eating at a restaurant, like entering, ordering, eating and paying, or more detailed events of each of those. That means, based on a script hierarchy the event of eating in a restaurant can be considered as the superior script, whereas 'ordering' can be seen as a subscript containing the action sequence of getting a menu, reading the menu, deciding what to order, giving the order to the waiter and so on.

4.4.1 Cognition-theory background

As every other cognitive construct, a script does not concern an observable fact but a cognitive model or, as mentioned earlier, a knowledge structure (Schank and Abelson 1977). As shown, it can be subordinated in the category of schemata. Those cognitive structures consist of a memory representation on stereotypical contexts. Whereas schemata themselves

in their original meaning only apply to objects, scripts – as a specific subgroup – are event schemata (Bartlett 1932; Schank 1982). The superior category that spans scripts and schemata can be conceived with a cognitive structure called "mental model" (Johnson-Laird 1983; Norman 1983). Mental models refer to individuals' representations of objects and events and can be used to describe, explain or predict events of a large variety of situations. In particular, they apply to machines, devices or other functional systems (Rouse and Morris 1986). Considering service system and service process as parts of the entire service, the customer may develop a mental model of the service system before he develops a script of the service process (Edvardsson 1997).

The extension of the script concept seems to be more compatible with neuropysiological approaches. The idea that each event is interpreted by means of pre-stored knowledge about a predetermined action sequence appears to be too rigid (Rumelhart and Norman 1981). Metaphors of memory such as library, filing cabinets or computers support the thought of information stored and being found in specific places. The number and amplitude of scripts required throughout life and stored in memory challenges the limits of human cognition capacity. Instead of specific fragments of information encoded in neural units, a new initiative suggested a distributed memory system: the basic architecture of the memory was now thought of as building up new links between units or changing the strength of existing ones. That means each neural unit takes part in the encoding of numerous memories. Information then is thought to be evoked rather than found. When activated through stimuli, diverse elements of the memory with relevant information chunks are set into motion (Anderson and Hinton 1981).

Concurrently, the concept of a parallel distributed processing system emerged. Sequentially organised information processing was believed to be obsolete and the modern view of human information processing implied representation and processing in a simultaneous and parallel manner, comparable to the metaphor of spatial storage and sequential search in computer systems (Abelson 1981). Scripts are therefore assumed to use not only identical experiences in the interpretation of newly presented events but all prior experiences. Therefore, an evoked script is not necessarily a copy from a complete stored script in memory but it can also be a composition from several script fragments applied in form of a new script. Thus, in the construction of a script different kinds of knowledge can be activated and composed in order to create an appropriate representation that can be used in the according event situation. When

knowledge of a similar event gained through participation, observation or other means of communication is available, it can be employed to assemble a behavior-guiding script. That implies that knowledge about the event influences the development of script knowledge. When knowledge of a similar event is not available in memory, event-related knowledge can serve as a substitute. The script assembled for use then contains knowledge from a variety of sources that are related to the event situation which implies that event-related knowledge influences the development of script knowledge.

4.4.2 Basics of the script concept

A script describes "a coherent sequence of events expected by the individual, involving him either as a participant or as an observer" (Abelson 1976, p. 33). It represents "a predetermined stereotyped sequence of actions that defines a well-known situation" (Schank and Abelson 1977, p. 41). Scripts are often understood in the sense of a theatre script as a template for the actor in his role. Thus, service scripts can be seen as a screenplay base for the customer so that he knows his role within the service transaction, is familiar with the tasks he has to fulfil and with what is supposed to happen throughout the service process (Schank and Abelson 1995; Harris, Harris et al. 2003) . Indicating what specific actions to carry out in specific situations, scripts help the client to know what to do and in what order to do it because they provide the customer with a precise procedure (Lord and Kernam 1987). Although it may seem like automated behavior in the first place, script-guided action can occur more or less automatically. Individuals are able to differentiate between situations and reflect their own sequences of action (Gioia and Poole 1984). If the consumer does not possess a script of the service situation, he may feel rather lost or disoriented and is unable to participate in the service transaction correctly.

Since scripts are as well defined as a set of expectations (Schank and Abelson 1995), it is significant to distinguish them from other cognate constructs, in particular expectations or habits. Scripts can be understood as a bundle of expectations, incorporating both the process and the outcome dimension of an event (Schank and Abelson 1977; Storbacka, Strandvik et al. 1994). Expectations portray what clients wish and hope for and what the clients think the service provider should offer and do in the service process. Therefore, the customer's expectations rather serve as a quality evaluation basis (Zeithaml, Berry et al. 1993; Coye 2004), whereas scripts, a priori, do not imply any quality assessment or benchmark

insinuations. Even though under certain conditions they may also be used as an evaluation tool, in the first place scripts make the client comprehend the service situation beforehand, but most of all throughout the course of the service situation.

Like expectations, habits are closely related to scripts, as well. Considering habits as response programs, as some authors do (Abelson 1981; Ouellette and Wood 1998), there must be a script underlying every habit. For that reason, a script is classified on a cognitively higher level: It is not only a simple response program but a knowledge structure that is accessible on a symbolical way, as well as through direct experience. Scripts can therefore be regarded as mental representations resulting from precedent behavior and guide habitual responses (Aarts, Verplanken et al. 1997). Thus, at some point, every habit provokes a script (Moller 2002). Habits can be considered as "learned sequences of acts that have become automatic responses to specific cues, and are functional in obtaining certain goals or end-states" (Moller 2002, p. 3). This definition points out the feature of automaticity, which to a certain extent also applies to scripts, comprising the dimensions of intentionality, (un)awareness, (un)controllability and efficiency (Bargh 1996; Verplanken and Aarts 1999). Each of those facets can to a certain degree be found in service scripts. Supposing that the customer enters the service situation to fulfil a given goal or satisfy a definite need, most service scripts will feature a high degree of intentionality. Depending on how familiar the customer is with the service situation, the degree of efficiency varies because the client needs more or less mental effort to carry out the script in the service transaction. Equally, the degree of awareness differs which at the same time is connected with the controllability of the service script and accordingly with the tasks the client is executing.

4.4.2.1 Scripts as structures

Abbot et al. (Abbott, Black et al. 1985) point out the following distinctions of scripts: They represent a set of actions which occurs in a chronological sequence and they possess a hierarchical structure. A script contains a set of actions related to the particular event. Knowledge representations of events let assume that script actions are linked in memory as sets. That means, one event will activate the rest of the action sequence and the entire set of actions can be accessed simultaneously. In an experimental study it has been found that subjects name plenty of actions when being asked to list typical actions of common situations (Bower, Black et al. 1979). Script norms have been identified among subjects who mentioned

similar actions, characters and actors when describing familiar events (Nelson 1981). It gives evidence of the existence of a commonly agreed group of actions that comprise events and situations. Other studies (Smith, Adams et al. 1978; Bower, Black et al. 1979; Graesser, Woll et al. 1980) proved that subjects with whom a memory test was done concerning actions in everyday events remembered having seen other additional actions in the script, even though they had not been part of the presentation. Concluding, related script actions are evoked in a set, partly serving as gap-fillers.

The action set in scripts is of a structured kind, they provide an organizing framework for remembering events in a chronological order. As a structure the script describes the suitable event sequences for a particular context (Schank and Abelson 1977) and can be regarded as "a hypothesized cognitive structure that, when activated, organizes comprehension of event-based situations" (Abelson 1981, p.720). As these definitions show, there is a chronology meaning that there are actions that precede and others that follow successively.

Several studies have been made showing that individuals largely agree on the order of events in many scripts. Subjects who were presented action sequences in texts or videos which were disordered and deviating from the standard order were found to recall those actions in the correct and appropriate sequence (Bower, Black et al. 1979; Liechtenstein and Brewer 1980; Galambos and Rips 1982). Those results indicate the existence of a chronological event sequence in the memory representation of scripts. According to Abelson (1981) some event situations may lack a sequential order, as in the example of a circus where different elements can perform in a diverse chronology, "weak" and "strong" scripts can be distinguished. Weak scripts then have no specified sequence of actions whereas strong scripts include information about the occurrence as well as the chronology of events.

Scripts do not only comprise a structure but the contained actions are organized as subsets or "scenes" in a hierarchical configuration (Schank and Abelson 1977). These scenes themselves are scripts or better called subscripts. The 'top' of a script hierarchy is represented by the script header, i.e. an action or event term that summarizes the entire event. The overall event comprises subsets or subscripts of which each has its own scene header. Again, each of the subsets or subscripts can be broken down into scene actions which are ranked and integrated in the hierarchy through their scene headers. Therefore the script hierarchy can be thought of as a number of superscripts comprising smaller embedded subscripts.

At a further developed stage of a script, called a hypothetical service script as will be explained below, a multitude of service interactions produces a complex causal process structure with a lot of branch points and a number of subscripts. Depending on the complexity of the service situation and therefore the script structure, scripts are frequently nested, i.e. a superscript comprises a number of subscripts. Hence, scripts are commonly embedded in hierarchical structures (Uyl and Oostendorp 1980). Each subscript comprises a cluster of actions with the purpose of achieving the overall goal that is spanning the superscript (Abbott, Black et al. 1985).

Empirical evidence for such hierarchical structures of scripts has been given by some studies (Bower, Black et al. 1979; Abbott, Black et al. 1985). Subjects were asked to split an event description into groups of statements that fit in and are in line with each other. These individuals grouped actions into "chunks" corresponding to scenes. They substantially agreed on where one action chunk began and ended which provided proof that the identified substructures showed consistency across individuals. Scripts were recognized as being hierarchically structured with superordinate and subordinate goals as well as with superscripts, subscripts and the according subactions. When trying to recall the event sequence, the individuals tended to reconstruct actions in a hierarchical order.

These configurations of scripts, as explained above, indicate that cognitive structures require coordination, e.g. between different sub-scripts. That means more complex script structures call for a higher level of coordination which causes the individual – directly or indirectly – transaction costs. Since the objective of a service process is to reduce transaction costs, it is the supplier's responsibility to design the service process with not too many encapsulated process sequences. This way, the script structures developed by the client are kept on a simpler level and thus, transaction costs can be kept on a low level, too.

4.4.2.2 The evolution and the construction of scripts

From very early stages in a person's life scripts can be aquired by both direct and indirect experiences. Direct participation as well as observation of events are relevant sources of script knowledge. The components of an event are characterized by structural relationships featuring temporal as well as causal relations. Out of a representation of an event that is distinctively structured generalizations are built up which eventually develop into scripts (Nelson 1981).

Direct script acquisition embraces interaction experience with other people, events, and/or situations. Such experience can provoke the script development process. Consumers learn and internalize behavioral actions for certain service situations, like airline check-ins because they actually experience the service event. Repetition of service experiences helps to consolidate a script. During phases of script development reward and reinforcement are important elements[58] that are part of the script structure and support the learning of script action behavior. Indirectly, scripts can be acquired through observation of fellow customers, for instance, but also through communication or media. The latter two, in particular, can be used from the service provider's side as means to enhance and foster script development. Conversations with others, as for instance fellow customers, can provide the client with indications about the service procedure. Similarly, promotional material portrayed in information brochures, booklets or videos offers relevant hints about appropriate behavioral actions in a service event.

4.4.2.3 Script elements

After gaining insight in the basics of the script framework it is important to examine the constituent elements that build up a service script. Service scripts contain information not only about the sequence of episodes and the role of the client, but also about the main characters, the setting and the background actors of the service situation. Furthermore, scripts include objects of the event and partly the client's expectations about the service transaction (Smith and Houston 1983). Thereby, more distinct and stronger scripts tend to include expectations rather than weaker developed ones (Hubbert, Sehorn et al. 1995).

In the first place, the main characters of the service situation comprise the client himself. He is involved in the service situation as a participant and/ or as an observer, depending on how much contribution the type of service requires from the client. A dentist's consultation for instance necessitates that the patient explains where the pain is; during the rest of the course of the service the patient is simply required to sit in the chair and to open or rinse his mouth. Apart from the patient himself, the dentist as well as the dentist's assistant take over the role of other main characters in the service script. Even though the receptionist or other patients in the waiting room, for instance, are simply background characters, they represent an important

[58] This can be traced back to the theories of classical conditioning (Pawlow (1903), Yerkes and Morgulis (1909)) and operant conditioning (Skinner (1950)). Other basics of learning theories have been discussed in chapter 4.3.1.1.

part as they are completing the customer's script. In this example, the setting would presumably consist of typical medical practice surroundings with pale or sterile wall colours etc. Objects involved in the event would be represented for instance by the dental apparatus in the consulting room or magazines in the waiting room. The chronology of that service script can roughly be delineated by the patient's registration at the reception, the waiting in the waiting room and the consultation by the dentist. Each of these episodes again contains distinct action sequences as the registration at the reception involves the greeting of the receptionist, communicating personal and insurance data, possibly filling out a patient's questionnaire and so on.

All script elements emphasize different aspects, namely structural and procedural script aspects. The structural aspect is understood as what belongs to a script and the procedural aspect can be described by how the script is used (Uyl and Oostendorp 1980). Elements like the characters, i.e. main and supporting actors, the setting including the location, the facilities, the equipment and other objects are part of the structural aspects. In contrast, the action sequence or chronology of the service script rather belong to the procedural aspect. Depending on the transferability of the service script, which will be discussed later in the text, the structural aspects of a script may vary and be replaced with other elements. The procedural aspects can also be subject to minor changes, if the script is used in a different service context, but the basic procedure as a framework can remain the same. The patient's script at a physician's practice, for instance, would involve different apparatus than at the dentist. But the patient still has to register at the physician's reception, wait in the waiting room and is then called on to the consultation where he has to describe his disturbances and be examined by the physician.

The service script as a kind of procedural knowledge or procedural schema is offering a pattern of orientation or action to the customer (Mandl, Friedrich et al. 1988); it can be used as a "manual" guiding the client in a number of similar situations. A certain sequence of episodes is stored in memory and encoded as a categorical pattern. When the client finds himself in a similar situation, the pattern is identified and the script is recalled. Thus, a script activating event is initiating the rest of the action sequence. Likewise, if in a new service situation the customer tries to recall a similar service script so that he can keep up the action sequence and does not feel lost in the new service situation (Schank and Abelson 1977; Nerdinger 1994).

4.4.3 Developmental stages and forms of the service script

The establishment of scripts is configured on the basis of three levels. At first, single experiences which are also called "vignettes" are being stored. Vignettes are understood as the coarse components of remembered episodes in the customer's experience, as for instance the single roles of the main characters involved in the service situation. Only a coherently linked chain of those vignettes will build a service script. This first level is considered as an "episodic representation". On the second level a "categorical representation" can be constructed, implying that the repeated experience of similar service episodes results in generalizations for the service process. Finally the last level containing a high number of script elements is called "hypothetical representation" and can appear as follows (see Figure 4-1):

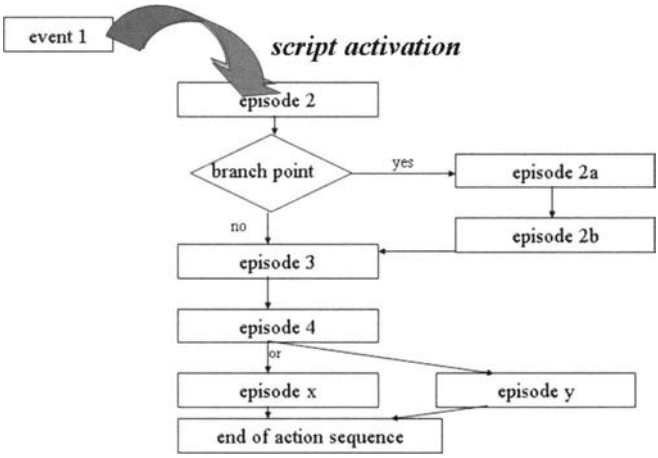

Figure 4-1: Hypothetical representation of a script

These three script levels develop from a rather concrete to a more abstract stage (Abelson 1976). At the third stage, the hypothetical service script, a multitude of service interactions produces a complex causal process structure with a lot of branch points and a number of subscripts. With enough experience or learning acquired and generealized across contexts, a hypothetical script can act as a "metascript" or generealized script, i.e. those scripts serve as a guideline for the behavior of a group of service situations which might be abstract but still show similarities. By definition, metascripts specify at a higher level of abstraction than a "normal" script (Abelson 1981). Such implies that script episodes may not necessarily be stored with the representation of the particular script context but they are rather stored at a

metascript level. The script is therefore less context-bound and more generalizable, e.g. an event sequence stored at a physician's office may be stored as episodes of a health service setting.[59]

The wider the wealth of the client's service experience, the more extensive, generalized and coordinated the service scripts are. The level of script guided behavior increases with a higher rate of repetitive and standardized activities. Nevertheless, service scripts are as well generated for less standardized service episodes. Merely the period of time, necessary for the development of more extensive scripts, will be longer because the service situations are not as much alike and recur less (Walgenbach 2000).

Another special form of a script is named a "protoscript" appropriate for the accomplishment of similar process sequences. Differences between service situations result in several potential variations within the action sequence of a protoscript that are called "tracks". When the client is facing a service situation, he or she starts searching for a familiar situation from his wealth of script experience that matches the actual service situation (Schank and Abelson 1977; Abelson 1981). Since no service situations are commonly identical, service scripts comprise slots, i.e. abstract categories to which certain values or variables are allocated (Walgenbach 2000). This way, scripts can be transferred and applied to similar but rather new service situations. At the same time, new experience can be integrated in the existing service script which possibly results in new script tracks (Mandl, Friedrich et al. 1988; Walgenbach 2000).

4.4.3.1 Script dimensions

A service script is characterized by the learned experiences of the client, the degree of social interaction within the service situation and the number of service incidents, as well as the length of time (Schank and Abelson 1977). These aspects have an impact on the following script dimensions which apply to a variety of service settings:

- script intensity,
- script complexity and

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[59] Another knowledge structure is called memory organization package (MOP). Schank (1980; 1982a; 1982b) suggests that MOPs are higher-level generalized event representations that relate to scripts. Typically, a script event comprises several portions of other complete events. Those portions are arranged and organized in a MOP which is based on norms. Since a MOP contains information about many settings (including many sripts), it is more general than a script. MOPs hold information about how memories are linked in frequently occurring combinations. A MOP is both a storing structure and a processing structure. It can be seen as an ordered set of scenes directed towards a goal.

- the number of scripts (Tansik and Smith 1991).

Script intensity is understood as the degree to which a customer's actions are determined by his service script. A very intense service script concedes little or no variation of the customer's actions during the service process, whereas a less intense script features a high number of script slots and offers the client more opportunity to improvise. Script complexity bears on the scope of cognition that is required from the client at various points of the service script. Some service situations impose more decisions or in general more contribution on the customer than others. A customer having his shoes repaired by a cobbler will face a service script of relatively low complexity, while a client engaging a wedding planer will be confronted with a service script of higher complexity. The number of scripts, as the third stated dimension, refers to the quantity of scripts that the service process consists of, i.e. the number of scripts that the customer processes in order to take part in the service transaction. Those dimensions interact insofar as a higher complexity and number of scripts for example most likely result in a less intense service script. All three dimensions have an impact on how distinct and developed the customer's script appears when performing as the service co-producer.

4.4.3.2 Types of scripts

Scripts can be classified into different types: personal scripts, instrumental scripts and situational scripts (Schank and Abelson 1977; Banyard and Hayes 1995). Personal scripts are characterized by the specified behavior patterns, the manners and the expectation or desire of the main actor and merely exist in his mind. However, a personal script does not involve any planning as the individual takes part in a sequence of events in an ad-hoc kind of way. Whereas instrumental scripts are focused on the actor's very clear purpose or certain intentions and therefore express prescribed sequences of actions. Instrumental scripts distinguish themselves by little variability, a rather rigid sequence of events and a single participant; they can mostly be found in everyday situations like boiling water or tying one's shoes. In terms of structure they are much the same as situational scripts; however, situational scripts involve multiple participants and a significantly higher variability (Schank and Abelson 1977).

Service scripts prove to be part of the third category because they feature all of the traits of a situational script: a specified situation, the interlocking of the actors' roles and a shared understanding between the characters of what is supposed to happen. A service situation is

specified because it takes place in a particular context where all participants enter with a certain goal; the client wants his problem to be solved or his need to be satisfied while the service provider wants to solve the problem to process a transaction; both parties want to create value. The participants can only exit the service situation successfully if their roles complement one another, they know what to do during the service process and therefore result in the intended service outcome (Schank and Abelson 1977; Agnoletti 2003).

Apart from the situational script, i.e. the dominating purpose of the service and the reason why the client is entering the service situation at all, the customer may have personal sub-goals. Such sub-goals of the nature of a personal script may again affect the client's situational script. Equally, instrumental scripts may occur as part of the situational script. The situational script of an airline passenger, for instance, may roughly be delineated by the following action sequence: checking-in, boarding, making use of the airline catering and facilities during the flight, disembarking, collecting luggage, and leaving the airport. Getting the flight attendant's phone number may be a personal script, whereas brushing his teeth at the airport after the landing may be an instrumental script embedded in the passenger's situational script. Accordingly, to a certain extent, all three types of scripts can possibly be found in a service script. Thus, it is important that the situational script of the customer prevails securing an unobstructed and successful co-production of the service process.

4.4.4 Script functions

Scripts carry a double role: event understanding and event behavior (Abelson 1981). The first role refers to the script functions that can be understood from a micro perspective regarding cognitive processing and understanding. The second role implies rather a macro perspective on the function of scripts as in guiding and facilitating actions.

Based on their characteristics scripts entail a function of encoding and representation. It deals with those activities that facilitate perception and comprehension of incoming stimuli. Scripts offer a structure for those incoming stimuli. They select what is encoded, they therefore define what information will later be available in memory and consequently, scripts reduce the cognitive processing time. Scripts facilitate understanding by recognizing an event situation and trying to match an appropriate script. Understanding here means to recall the

closest prior experience and being able to apply the information that has been generated from it (Schank 1980).

At the same time, scripts act as "gap-fillers" when inferences are made (Graesser, Woll et al. 1980). Experiments have proven that gap-filling describes the fact that individuals tend to remember and fill in script-consistent but in the experiment unmentioned actions. Their scripts provide them with the missing elements and cause them to complete the event sequence with additional information that was not explicitly stated or presented to them. If a stimulus-configured situation is incomplete, the missing information may be supplied by an implicit underlying script (Bower, Black et al. 1979; Graesser, Woll et al. 1980).

Scripts guide behavior because script-included episodes enable a person to predict or expect events in familiar situations. They tell people what to do in familiar situations and prevent them from being constantly concerned with the on-going action in every detail. Before a script can be activated and script-guided actions can be carried out, the individual needs to have a stable cognitive representation of a script, the situation must be of a script-evoking context and the person must enter the script physically or mentally (Abelson 1981).

Referring to carrying out actions scripts do not only help individuals as a guideline and orientation pattern of what to do in the service situation, but there are other functions that a script can fulfil (Ashforth and Fried 1988). Those that seem to be most relevant for the client in a service situation shall be pointed out below:

1) Service scripts help to control the service process by offering structure and routine of action sequences. Compared to the explicit control of activities by a blueprint or other service operation techniques, scripts provide an implicit kind of control. Since they refer to rather stable sequences of episodes, they offer guidelines for the customer's behavior and fortify the client in his role throughout the service process. Besides, scripts facilitate the routinisation of service encounters: if the situation necessitates a subroutine, the client can invoke it because it is included in his service script (Tansik and Smith 1991).
2) Scripts do not only guide the client's own actions but also enable the client to anticipate the behavior of the interacting person(s), i.e. the service provider or the according contact employee, because they comprise a rather fixed sequence of events (Ashforth and Fried 1988).

3) Scripts serve as a basis for evaluating a service. Since they result in the development of normative standards, scripts offer an evaluation basis for process sequences and can be used as a quality assessment tool (Smith and Houston 1983).
4) Scripts help to economize capacities and costs. They facilitate interactions by making the coordination of actions between interdependent actors easier if their scripts are harmonized with each other. That means, additional transaction costs, caused for instance by additional coordination activities, can be cut down. But it is not only the financial cost that is reduced. Scripts also contribute to save cognitive capacity and promote cognitive efficiency. Since they are activated and accomplished by routine, cognitive capacities of the individual can be economized as well (Berger and Luckmann 1966; Ashforth and Fried 1988).
5) Certainly the most important function of scripts is the establishment of analogies and the resulting transferability, since it presents a criterion for how distinct the script is formed. Once a service script is learned, specified and retained, that script provides the client with the knowledge needed to act in subsequent, similar but altered or new service situations. "Action creates (scripted) understanding, and that understanding (in turn) creates other action(s)" (Tansik and Smith 1991, p. 37). Such is also termed as "tagging", i.e. scripts are becoming more detailed by including new experiences (Graesser, Gordon et al. 1979; Hubbert, Sehorn et al. 1995). This way, scripts facilitate action in new situations which is important for the service provider, as he offers new or modifies the transaction process.

4.5 Scripts in services

In most service situations the service provider depends on the participation of the client. At least to some degree, every service production implies co-production, with the client or some of the client's resources to be integrated into the service process (Allport 1933; Barnard 1948; Parsons 1970; Sasser, Olsen et al. 1978; Lovelock and Young 1979; Silpakit and Fisk 1985; Grönroos 1990). Customer participation or co-production[60] – active and passive, depending on

[60] Different authors prefer different terminologies to describe the identical notion. Engelhardt (1966) and Parsons (1970) use the word "customer integration. Other terms like "servuction" (Eiglier and Langeard (1999)), "co-production" (Sasser, Olsen et al. (1978)), "prosuming" (Toffler (1980)) or as well "consumer participation" (Silpakit and Fisk (1985)) tend to explain the same idea and all underlie an equal basic assumption, scilicet the client's contribution to the service production in terms of actions and resources. In this paper, the terms co-production and customer participation will therefore be used in the same sense.

the service – refers to the mental, physical and emotional inputs that the client contributes in order to produce and/or to deliver the service (Silpakit and Fisk 1985). These inputs include actions as well as resources in the form of individuals, objects, information, rights and/or nominal goods that, even though coming from the customer, are processed and integrated in the service transaction (Lovelock 1983; Fließ and Kleinaltenkamp 2004). It demonstrates that the client's participation need to be stressed in service production, delivery and design because the client affects the quality and the value added of the service outcome. Consequently, it benefits the overall service production, as well as the service operator if the client knows when, where and how to participate in the service process and what to contribute (Lovelock and Young 1979; Bateson and Langeard 1982; Mills, Chase et al. 1983; Bowen and Jones 1986; Edvardsson 1997).

Without doubt, some services necessitate more customer participation than others: a service with low-involvement and little integration like a dry-cleaner implies less co-production than high-involvement services requiring a high degree of integration, as for instance a tandem sky-dive operator or a wedding planner (Baron and Harris 1995). The client therefore is required to develop an ex-ante customer process notion that guides him through the process. Due to this ex-ante process structure he/she knows what is required from him/her as a co-producer (Lovelock and Wright 2002). Such can be described with the term "service script". Hence, in order to fulfil his/her role as a co-producer it is helpful for the client to possess a service script because it simplifies the co-production. Equally, the development of the customers' service scripts is essential for the service provider. It makes the co-production more efficient and more effective resulting in higher quality and a superior service outcome (Bateson and Hoffmann 1999).

4.5.1 Benefits of service scripts

Service scripts help customers to achieve a better understanding and a more precise knowledge of the service production and delivery process. The script concept sheds light on how service knowledge is organized and how it influences customer understanding and performance in the service process. Scripts enable the client to find his/her way through the service process and equip the customer with the information needed to participate and deliver the crucial contributions in order to achieve a productive service outcome. The benefits of the customer's service script are obvious: Many researchers hold the view of customers as partial employees

(Bateson and Langeard 1982; Bowen 1986; Mills and Morris 1986) implying that they are playing a vital role in the service process and therefore influence the service provider's productivity (Barnard 1948; Parsons 1956; Lovelock and Young 1979; Bowen and Jones 1986). If the customer's inputs have a considerable impact on the service quality, the service outcome and the value-added and if the delivery of these inputs depends on the client's script, then the customer's service script deserves closer attention.

Whereas the service staff of the service company receives training and schooling instructions, most customers in the role of a co-producer can be seen as 'amateur' employees: they operate in the service system without being trained (Xue, Harker et al. 2004). Just as employees often use a service blueprint (Shostack 1984; Kingman-Brundage 1989) to know what the entire service process looks like and what actions they have to carry out during the service transaction, customers use their service script instead of a blueprint. Hence, the service script can be regarded as the client's personal surrogate process map; it serves as a guiding pattern and gives implicit instructions how much participation the service situation necessitates and what actions to perform. Exemplifying an online-banking service shows that some services cannot even be consumed without an available script because the service is almost entirely based on the client's deeds (Heim and Sinha 2001; Heim and Sinha 2002): If the client does not know how to use a computer and how to navigate through a webpage looks like, he/she will not be able to carry on with the banking transactions because the client is not able to operate the service system (Soteriou and Zenios 1999).

The considerations reveal that the customer's service script is a remarkable source to increase the productivity and efficiency of a service transaction. Both parties, i.e. service operator and client, contribute to the service production (Sasser, Olsen et al. 1978). When producing physical goods, like a loaf of bread, the baker needs to know the recipe in order to bake the bread; if he forgets to add one of the ingredients, the bread might loose its quality. Likewise, when producing a service, both parties, i.e. the service operator and the client, need to know the "service recipe" or the course of actions. That means, the quality of the service outcome also depends on the process behavior of the client which again relies on the client's service script. On the other hand, carrying out the actions fast or slow for instance has a direct impact on the process efficiency. The customer's performance quality and tempo also affects transaction costs, resulting for instance from necessary ex-post adjustments or due to a longer provision of the service system (Boyer, Hallowell et al. 2002; Xue and Harker 2002). Arriving at a

conclusion, it can be summarized that customer efficiency and productivity in a service process can be ascribed to the customer's script.

4.5.1.1 Service system and service process

The assumptions of this text rely very much on the context between the customer's service script and his mental model and the differentiation of service system and service process (Edvardsson 1997). In dependence on Edvardsson's idea (1997), the service system can be described as the resource structure of the service, including for instance technical and physical resources or the service company's employees, and represents a premise for the service process. The service process can only take place if the service system as a framework is set up. The client needs to familiarize with the different elements of the service system he encounters in order to participate in the service process. All elements of the service system can be differentiated by their external visibility, to what degree they form part of the service company's internal infrastructure and to what degree they take place onstage, i.e. if they are visible for the customer. Since service system and service process interact and relate to each other, it can be assumed that the client needs to build up a mental model first in order for the customer's service script to evolve.

A service process can be viewed as a series of activities taking place in a sequential and a parallel order and in interaction with the service client. It can be defined by the way the customer makes use of the service operation and deals with it (Kullven and Mattson 1994). The service process, i.e. the chain of activities, has to be activated by the customer and therefore forms the prerequisites for the customer process. In the service process different parts of the service system are employed so that the service system supports the process. Whereas the service system is static and makes the crucial resources available, the service process is dynamic (Edvardsson 1997). The client, in his active role as a co-producer, needs to be familiar with the service system. Only then he is able to fulfil his tasks during the service process and knows how to participate and what to contribute to the process. A hotel guest, for instance, needs to know that there is a reception desk, i.e. part of the service system, and vaguely has to be acquainted with what it looks like so that he is able to check-in, i.e. part of the service process.

Recapitulating service system and service process in their context, it can be said that the former represents the basis for the latter but at the same time both service components interact with each other and need therefore be taken into account simultaneously.

4.5.1.2 Scripts and service blueprints

While the manufacturing of goods specifies a production method along with the material components, the production of services is based on a process design specifying the process activities of a service transaction (Shostack 1977; Shostack 1982; Easingwood 1986). A prevalent design tool is the service blueprint; it visualizes the service process by mapping all process steps and thus helps to create process transparency. Not only is the service blueprint used as a tool to document the service process but also to analyze and particularly design new service concepts (Shostack 1984; Shostack 1992; Kingman-Brundage, George et al. 1995; Fitzsimmons and Fitzsimmons 1998; Lovelock and Wright 2002). The service blueprint is based on several lines, among them most notably the line of interaction, separating the customer's from the service operator's activities whereas all other lines are focussed on the internal process activities of the service provider (Kingman-Brundage 1991). Just as blueprints offer an explicit method of process description for the instruction and guidance of service employees, service scripts can be regarded as the implicit (Noteboom 1999) equivalent on the customer's side. They provide the client with a knowledge structure about the process to which he/she acts accordingly. Consequently, the customer's service script forms an inner process map for the client that guides him/her through the process instructing where, when, how and what inputs to deliver in the service situation.

Considering the significance of the customer's service script for the entire process outcome (Baron and Harris 1995; Bateson and Hoffmann 1999), the service blueprint holds a crucial deficit: So far, service blueprints are only used to portray the provider's side of the process; the client's processes are reduced to the activities on the line of interaction. But if the entire service transaction is to be optimized, the customer's processes have to be taken into account, likewise. In order to align the service operator's process optimally with the customer's one, there is a need to extend the service blueprint beyond the line of interaction and identify the customer's service script (Abelson 1976; Schank and Abelson 1977) more thoroughly. This way, the service blueprint can virtually be complemented with the customer's service script (Hubbert,

Sehorn et al. 1995). Such would lead to a better coordination between the two process halves and thus would reduce transaction costs, as discussed in chapter 3.

Scripts can be seen as having a double impact on the design and the engineering of a service: On the one hand, they have to be taken into account when designing the process. Therefore the following questions are raised: Firstly, what consequences does the existence of the customer's script have for the service provider's activities? And secondly, is there any influence on the arrangement of the process design? On the other hand, since the customer's script can increase the productivity and the efficiency of the service process, the service provider is keen on leveraging the development of the client's script. Therefore another question is how the service provider's process design can elicit, shape or enhance script development on the customer's side. Those considerations imply that the client's script plays a crucial role for the design of service processes (see also section 4.6.4).

4.5.2 Scripts in literature

Foremost, the study of cognitive scripts has been predominantly popular in numerous research areas such as cognitive, social and clinical but also developmental and anthropological psychology (Bartlett 1932; Bransford and Franks 1971; Schank and Abelson 1975; Abelson 1976; Schank and Abelson 1977; Bower, Black et al. 1979; Graesser, Gordon et al. 1979; Abelson 1981; Neisser 1982; Schank 1982; Schank 1982; Chan, Chiu et al. 1999; Agnoletti 2003; Rosen, Caplan et al. 2003). Even though some psychological studies for instance included service settings as exemplary everyday-situations (Schank and Abelson 1977; Bower, Black et al. 1979), only hesitantly have marketing academics started to apply the concept gradually more to service research issues.

4.5.2.1 Services literature

Three major tracks can be identified in service literature. One group is chiefly concerned with the investigation on existence and characteristics of scripts; by comparing action sequences among subjects they also observe the homogeneity or alternatively the divergence of scripts (John and Whitney 1982; Bozinoff and Roth 1983; Hoy 1991). Several researchers among them Rethans and Taylor (1982), John and Whitney (1982) and Whitney and John (1983) conduct studies to explore the content and the structure of scripts as consumer knowledge and their role in decision-making (Erasmus, Boshoff et al. 2002; Moller 2002; Hellier, Geursen et

al. 2003). Smith and Houston (1985) come to the conclusion that the sequence of events in the consumer's memory, i.e. the script, must affect the performance in the service production process.

A second faction in literature introduces the script concept as a measurement basis for service encounter evaluation and satisfaction[61] (Churchill and Surprenant 1982; Storbacka, Strandvik et al. 1994; John 1996). In some early experimental studies scripts are used to operationalize expectations (Hubbert, Sehorn et al. 1995) in order to develop benchmark for the evaluation of service events (Smith 1983; Smith and Houston 1983). Solomon et al. (Solomon, Surprenant et al. 1985) pioneer pointing out the importance of congruent service providers' and clients' scripts for the service quality. This idea is incorporated in other works which examine the impact of harmonizing scripts on external and internal satisfaction, i.e. customers' satisfaction with the service quality, as well as the employees' satisfaction. Most notably, they implicate the script concept with the service performance (Broderick 1998; Bateson and Hoffmann 1999; Broderick and Vachirapornpuk 2002; Chung-Herrera, Goldschmidt et al. 2004).

The third group eventually applies scripts in terms of staff training, establishing standard service encounter routines (Louis 1980; Gioia and Poole 1984; Leigh 1987; Tansik and Smith 1991; Hubbert, Sehorn et al. 1995; Harris, Harris et al. 2003). According to the findings here, scripts can also be used as a basis to evaluate the performance of employees and to generate prototypical organizational behavior.

Resuming the existing services marketing literature on scripts reveals that research lacks the attempt to apply the script concept to clients' service performance and transaction cost theory as well as to explore the consequences concerning the service process design. Some studies imply that teaching scripts to customers – particularly in modified or new service settings – may benefit the customer's perception of the service offer in general and his/her perception of control over the service situation (Bateson and Hoffmann 1999). But those studies do not argue further. Similarly, there are works that presume scripts could be used to complement service design like service mappings as well as co-production (Hubbert, Sehorn et al. 1995).

[61] At this point, it shall be emphasized that the construct of satisfaction, in this context, is only relating to the process sequence, i.e. a bundle of service interaction moments, and cannot be applied with reference to the service outcome in terms of one single upshot product such as the final haircut or the repaired machine. In more general terms: with scripts, as an evaluation basis for the service, focus is set on the way of solving the problem rather than on the ultimate solution of the problem.

But it remains a mere and very loose idea that is not examined in any further detail. Research being concerned with the conditions that have to be met to elicit the client's script and resultant implications for service design is missing. Studies so far have neglected a thorough analysis of the script structure and developmental factors.

4.5.2.2 Routines

While routines attract attention in economics and particularly cognitive economics literature, they are essentially concerned with an analogous phenomenon that other research streams term as cognitive scripts. The cognitive structures that a routine is based on are mental models (Johnson-Laird 1983; Egidi and Narduzzo 1997). A routine, as a form of procedural knowledge (Cohen and Bacdayan 1991), is regarded as any procedure which supports the execution of a specific task and solves a set of problems. It therefore acts implicitly as a set of instructions that determine the actions to be taken when the actor is dealing with a particular situation (Egidi 1993). Such can easily be found to occur in service situations: Whereas the set of instructions is given to the service provider's staff in form of directive rules and process procedures, the customer needs to be geared to a course of action, as well. Thus, the client's routine is offering guidance through the service process. Cohen and Bacdayan (1991, p. 555) choose the following definition of routines: they are "patterned sequences of learned behavior involving multiple actors who are linked by relations…". In this context, the actors can be identified as service supplier or the corresponding personnel on the one hand and the service customer on the other hand who are linked to each other by participating in the service transaction.

Economics literature mainly applies the concept of routines to the inside of the organization; they see organizational routines evolve that lead to the realization of a final goal (Egidi 1993). But considering the completion of a service transaction between service provider and customer as the final goal, routines can also evolve on the customer side. That means customers can develop customer-specific or individual routines which lead to the realization of the service outcome. Acting in a service transaction situation, both parties have to comply with certain rules that the service situation implicates. Such rules can be regarded as provoking the emergence of routines (von Hayek 1980). Egidi (1993) differentiates between potential rules and personal meta-rules which can be transferred into the service situation setting. Herein, potential rules can be interpreted as the directions of the service provider how

process steps have to be carried out and what is needed in terms of customer participation in order to produce the service. Personal meta-rules can then be seen as the implicit production rules that are developed by the customer, i.e. they are analogous to the customer service script[62].

In a service situation there are not only organizational and invidual rules but interaction rules implying that the customer routine can only be carried out if the service employee fulfils his/her part of the routine as well (Egidi 1993). Egidi and Narduzzo (1997) argue that routinization of behavior results in a higher efficiency: Whereas fully rational behavior or computational rationality requires coordination between the actors, routines act as a substitute for coordination mechanisms. Like service scripts, routines as cognitive skills are assumed to be reusable and also transferable to other situations resulting in the evolvement of new or modified routines (Egidi 1993). Representing a set of condition-action-rules as hypothetical scripts do, routines prescribe the action steps to be carried out for every condition of the situation and therefore define the abstraction level (Egidi and Narduzzo 1997).

4.5.3 Scripts and role-theory

Regarding the customer as an important "part" of the service production process implies that the service company expects the customer to perform in a certain way. These considerations emphazise an aspect that is closely intertwined with the script theory in general: role theory. A role theoretic approach deals with the characteristical behavior pattern of individuals (Biddle 1986) and points out an important attribute of humans as "social actors who learn behaviors appropriate to the positions they occupy in society" (Solomon, Surprenant et al. 1985, p. 102). Role theory catches the customer performance from two perspectives: First, it is the action sequence that the service provider expects. In order to produce the service outcome, the service provider anticipates the customer to act and particularly interact in a certain way; i.e. the customer is expected to perform the co-producer role (Hubbert, Sehorn et al. 1995; Broderick 1998). Second, the service script that the customer develops of the service situation involves a several roles; that means the customer's own role as the most important one, but also role features of the interacting characters like the service contact staff or, as well,

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62 Seizing the idea that the scripts of customer and service employee have to be congruent for a successful service performance to take place Storbacka (2001), it can be assumed that the service script exists on both sides. That means both sides customer but also the service employees develop personal meta-rules. It is important for them not to conflict to the potential rules, the directive instructions of the service organization.

fellow customers (Humphrey and Ashforth 1994). A role concept is therefore part of the script theory.

The role concept can particularly be found in the idea of a situational script (see section 4.4.3). Role theory deals with the position that a person holds in the context of a social situation. Like actors of a dramaturgy, the individuals adopt a bundle of behaviors that matches the role (Solomon, Surprenant et al. 1985). In a service transaction situation, the service contact employee(s) take(s) on the role of the service provider while the beneficiary of the service adopts the role of the customer. That illustration reflects the basic principle of role theory: Roles complement one another, that means they define themselves in relation to other roles (Katz and Kahn 1978), as for instance the role of flight attendant and passenger, the role of physician and patient and so on. Only then can a service encounter be successful, if the participants are able to anticipate the actions and behaviors of the other role tenants. That can be achieved through the use of a service script (Hubbert, Sehorn et al. 1995).

Although role-theory and script-theory perspectives show many similarities, two main differences can be found between them. On the one hand, the script theory comprises a wider range of concerns, as the impact of the service setting for instance. Thus, it deals with the entire service process rather than merely with the interpersonal service encounter. On the other hand, scripts are defined as intraindividual and therefore depend on the individual's experience and personality. Whereas a role, defined in a more objective manner, is presumed to be extraindividual and emphasizes a social position or title rather than the individual's perception or cognition. A role is therefore not compatible with the concepts of service evaluation and customer satisfaction. With regard to the script, the service provider needs to reveal the script and either enact or revise it with the customer. With respect to a role, the service provider needs educate the customer about the service process (Bateson and Hoffmann 1999). Only then will customers be able to define their own role in the service transaction.

4.5.3.1 Role theory basics

As the customer holds expectations relating to the behavior and the performance of the service provider and the service employees, the service company or the service personnel hold ideas on the role of the customer (Liechty and Churchill 1979; Parasuraman, Berry et al.

1985; Bitner, Booms et al. 1990). A service transaction implies twofold role expectations: the job requirements of the service provider as professional role expectations and the customer role expectations concerning the exigencies towards the customer to participate in the service production process as co-producer (Swartz, Bowen et al. 1992).

Services are characterized by the interaction between the service provider and the customer. That interaction is based on specific patterns of behavior which are learned and often routinized as some kind of ritual (Goffman 1967; Solomon, Surprenant et al. 1985). Interactions between individuals – in contrast to human-machine-interaction, for instance – feature instrumental, as well as social actions of the interacting persons (see section 4.2). Thus, instrumental and social aspects are inextricably tangled with each other (Kelley, Donnelly et al. 1990). For that reason, in a service environment complementary rights and duties, in terms of achieved service performance and reciprocal service in return, are not only regulated by the transaction contract between service provider and customer. But in addition, expectations that are based on norms and roles complicate the interaction situation. Solomon et al. (Solomon, Surprenant et al. 1985, p. 103) define the role expectation as "the privileges, duties, and obligations of any occupant of a social position" which can be applied to both, staff and customer. Not only does it set the boundaries within which both parties are expected to perform but it also creates anticipations about the other party's behavior (Bateson and Hoffmann 1999).

4.5.3.2 The customer role

Before, during and after the service performance various interactions between the customer and the service company or the service contact personnel are taking place. The majority of those interactions is at least partly structured and always goal-directed. Those goals that the actors try to pursue through the interaction are often defined on a short-term basis but mostly in an unambiguous manner (Bitner 1992). Different interactions involve reciprocal role expectations, i.e. customers as well as service providers possess a rather distinct idea about one's own and the transaction partner's expected behavior. Based on that, a set of normative expectations[63] can be identified that is referred to as a (social) role. A role can be defined as

[63] Norms can be differentiated into various kind of norms, as for instance more official and obligatory norms and norms that are appropriate but do not have to be adhered to. Based on different kind of norms and norm conformity, several customer roles can be identified – according to their compliance with norms: see thereto Solomon, Surprenant et al. (1985), Mills and Morris (1986) and the literature included there.

"a set of behavior patterns learned through experience and communication, to be performed by an individual in a certain social interaction in order to attain a maximum effectiveness in goal accomplishment" (Solomon, Surprenant et al. 1985, p. 101). It represents an action or a set of actions that is prescribed or fairly standardized (Katz and Kahn 1978).

Regarding the service customer as an input source and co-producer of a service, the service customer role can be distinguished according to the role specificity: the "general consumer role", the "product core role", and the "firm specific role" can then be differentiated as "customer task roles" (Canziani 1997). The first refers to general role expectations that apply to all service customers like making a reservation or placing an order. Product core roles are related to a specific industry sector as exhibiting the passenger ticket is distinctively the case in the public transport industry. The third category, i.e. firm specific roles, refer to roles that are typical for a particular company, for example using a special data identification card in order to operate the facilities of a service device (Gouthier 2003).

In the context of the service production process illustrated in the integrative value chain (Fließ and Kleinaltenkamp 2004), the customer faces the task of optimal interaction with other internal and external production resource factors. In order for the service production to take place, it is the role of the service company to facilitate and realize that interaction or integration. But the customer's role consists of participating and apprehending the essential tasks. That co-production or "collaboration" (Prahalad and Ramaswamy 2000, p. 80) of the customer involves various subtasks comprising instrumental and social elements (see section 4.2). On the one hand, the service customer often needs to make decisions when choosing one of several outcome options or selecting one course out of various process alternatives (Bowen 1986). Another crucial aspect is the customer's role as information source: By acquiring and holding specific information the customer coordinates the course of the service process by distributing information to different company units. That is the case in service situations where the customer has to pass through several departments and divisions of the service company and thus has different service encounters. Since the customer gives information on the previous course of the process, he/she acts as a coordinator between the different subsystems and employees of the service company (Canziani 1997).

In order to be able to apprehend the role tasks, the service customer is required to acquire knowledge about the service itself, service provider, and the interactions involved in the

service process. That means, the service customer is cognitively challenged to develop abilities for the co-production performance (see section 4.3.1). In that context, two important determinants can therefore be identified to govern the service co-production role of the customer: the cognitive ability to perform, as well as the willingness to perform.

4.6 Mental models

Mental models are the basic structure of cognition[64]. They are considered as representations of reality that people use to understand specific phenomena and possess an essential and coalescing function in representing objects and sequences of events as well as social actions of daily life (Johnson-Laird 1983). As such representations, they can refer to systems, functions, objects and/or tasks with which users interact (Sasse 1997). Mental models symbolize a systematic method or a cognitive layout to structure information in the memory of a person – for evaluating the efficiency of an information structure on the one hand and for building user-focused information structures on the other hand (Lokuge, Gilbert et al. 1996). Based on them the individual is able to understand, explain and predict interaction (Norman 1983). They express the structure of situations as the individual perceives or imagines them so that those situatiuons are easier to comprehend (Johnson-Laird 1983). Due to mental models individuals are capable of proactive responses which are based on the understanding of structure. If mental models are not employed, the individual is merely able to respond reactively based on the observation of events (Senge, Kleiner et al. 1994).

First and foremost, the term "mental model" was used by Johnson-Laird (1983) stating that individuals use mental models to represent the world they are interacting with. This assumption is trying to provide a fairly broad explanation of human thought (Sasse 1997). Other authors use mental models in a more specified way in order to explain the interaction with a specific system (Norman 1983); in their opinion the term "mental model" refers to a person's internalised representations of a system, an event or a device (Gentner and Stevens 1983). For the research purpose of this thesis, i.e. in order to explain customer processes, the latter approach seems to be more suitable.

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64 Cognitive maps are a particular kind of representation of mental models, representing important objects and concepts. They can be thought of as a network that consists of objects, concepts and the relationships between them (Kearney and Kaplan (1997)).

The following characteristics help to illustrate the cognitive construct of mental models (Schumacher and Czerwinski 1992):

- they are incomplete and continuously evolving
- they are not necessarily accurate representations of a phenomenon
- they are frugal and give simplified explanations of complex events
- they can be used even if they are not completely correct
- they can be thought of as sets of condition-action rules

4.6.1 Mental model development

Forbus and Gentner (1997) argue that elements from different approaches need to be combined in order to explain the fundamental conditions that are necessary for a mental model to work. With reference to those different views on mental models, as for instance qualititative simulation (De Kleer and Brown 1983) or qualitative process theory (Forbus 1984), the development of mental models can be explained. The first approach assumes that the individual's mental representation of an entire system as a causal model is based on the descriptions of the state and the changes of the state of the single system components. That means a customer for instance is only able to interact with the service system when understanding the service facilities or the role of the contact employees (De Kleer and Brown 1983). A mental model is then considered as a dynamic representation or simulation whose relation-structure resembles that of the processes it is trying to imitate (Craik 1943).

The qualitative process theory, analogical or qualitative reasoning, states that mental models are always constructed through analogical reasoning (Forbus and Gentner 1997); they can therefore also be regarded as structural analogies of the world (Johnson-Laird 1983). This approach is based on the transfer of object features and/or relations between those objects. Regarding two processes or event situations named base and target process[65], it is assumed that the individual can build up analogies and apply these to the new situation. Following analogical reasoning, the focus of mental models can be seen in the transfer from one internalised model to another, assuming that structural similarity incorporates surface

[65] Structure-mapping theory can be used to compare base and target processes by displaying a set of correspondences which align specific items (Gentner (1983)). The mapping of correspondences is based on the building of analogies. Herewith rules and abstractions like equations can be operated. Exemplifying the rule, the base represents the rule whereas the target is the situation to which the rule is to be applied to Forbus and Gentner (1997).

characteristics and syntactic features (Forbus 1984). This rather mechanical approach differs from the original idea by Johnson-Laird whose concept focused on meaning (Johnson-Laird 1983).

Following the thought that the logic of mental models is based on formal rules of inference, the development of mental models and of those inferences highly depends on the premises in question (Osherson 1975; Braine 1978). In order for rules of inference to be employed by a mental model, they have to be either formal or content-specific but – even more important – they depend on the manipulation of mental models (Johnson-Laird 1983).

People's existing knowledge has a considerable influence on their reasoning about a new phenomenon, system, idea or problem (Gentner and Stevens 1983). Novices' and experts' knowledge retrieval pattern also differ with regards to the number of their relational properties. Relational catenations like causal arguments and abstract principles referring to the functioning of the system occur more often with experts than with novice users (Borgman 1986). The more experienced and progressed the individual's mental model, the more it develops from a rather concrete to a rather abstract level (Forbus and Gentner 1997). When new information is integrated into the user's knowledge structures, it becomes available for being reused in future setting (Komlodi 2002).

4.6.2 Scripts as mental models

Comparing mental models to schemata or scripts, they cannot be regarded as a separate group of cognitive constructs. Instead, the overall definition of mental models spans schemata and – again, as a particular sub-concept of schemata – also scripts, as mentioned before (see section 4.4). Mental models exceed schemata because they incorporate perceptions of task demand and task performance; they are concerned with how people perform tasks. As explicated earlier in section 4.3.3.2, schemata develop through experience, interaction and repetitions of those (Ausubel 1968), i.e. frequency will contribute to the development of schemata. Schemata modification can occur in various forms: simple accretion without alteration of the existing schema, schema tuning, i.e. new information or experience is embedded and the schema becomes more consistent, or schema restructuring resulting in the creation of a new schema. That means, whereas schematic knowledge deals with knowledge representations of

a more static content and helps to organize structures, mental model representations deal with the knowledge of procedures and help to employ those structures (Ausubel 1968).

Like scripts, mental models develop with regards to the state of knowledge in them. At first, they just comprise a description with many concrete details about the object and the behaviors or events. At a higher developed stage, a mental model includes a causal attribution relating different factors or events. It can be enhanced by an outer person, i.e. someone explaining the event chain situation to the individual, or by analogy. In the latter case, the analogy can be taken from the individual's own experience or again from the explanation given by someone else for another situation. More general abstractions and generalizations can be derived from a mental model for a particular situation (Forbus and Gentner 1997).

For the sake of completeness, it shall critically be annotated that mental models are only one way that knowledge representation in memory can be thought of (Komlodi 2002). As in the testing of most cognitve constructs, experiments have found that individuals have difficulty in articulating models, a phenomenon which is also called "model articulation problem"[66]. In order to avoid biases in empirical results, the users' familiarity or competence with the actual task, i.e. the service performance has to be examined at the beginning of a study (Borgman 1986).

4.6.3 Mental models in service process interaction

As mental models are often found in the context of human-computer-interaction (Sasse 1997), they can also be applied to other kinds of process interaction like services. A mental model can be seen as a copious and elaborate structure reflecting the user's understanding of what the systems contains, how it works and why it works this way (Carroll and Olson 1988). The role of the user – in the context of this thesis – can be adopted by the customer while the system represents the service system. The customer's model can be acquired through prolonged and regular interaction with the service system (Sasse 1997) or in other words

66 Mental models can be grouped into three different categories: 1) right brain mental models: they are a kind of tacit knowledge, providing the individual with theory in use and intuition. Right brain models tend to be more accurate than left brain models. Yet, the individual does not always understand the actual use of them, 2) left brain models are regarded as rational and explicit. Even though they are inaccurate, they are useful and easy to understand for the individual, 3) metaphors: this category does not represent a mental model in its purest form but provides a link between right and left brain mental models (Senge, Kleiner et al. (1984)).

service experience. Customers holding a mental model of the service system they are interacting with are able to predict system behavior or the course of the service process. Mental models when employed in complex systems, like a service system, can help customers to operate better within the service interaction and therefore improve productivity (Norman 1988).

Since different authors use different terminologies, it is important to distinctly define the terminology that seems to suit the service context best. According to Norman (Norman 1983) on the one hand there is the mental model. It is the actual model that the user – or here, the service customer as user of the service system – has memorized. Through interaction with a system the user develops a mental model which in the service context can be specified as the customer's mental script. Second, the conceptual model is the planned target model or process design; it has to be designed in a specific way for the system to work or the process to be performed. And third, the target system can be considered as the service system. The central thought that the idea of mental models is based on is that the user's mental model – or as mentioned earlier, the customer's script – is originated and shaped through interaction with a target system (Sasse 1997).

When customers interact with the service operations system, they make contact with the system elements. Such a customer contact object, i.e. an identifiable entity in real or abstract form that customers can perceive during the service operation, can be exemplified by service facilities, employees or other service operational components (Tseng, Qinhai et al. 1999). Consequently, it can be reasoned that a possibly high congruence between the mental model and the conceptual model, i.e. the user's and the designer's model results in a functioning target system, i.e. an efficient service process. Whereas the customer's model, i.e. the service script, is regarded as internalised and dynamic, the design model can be regarded as externalised and more static (Nielsen 1990).

Three further elements of a taxonomy which are relevant for a service context are framed by Nielsen (1990):

- manuals as well as other documentation. Those can be used by the customer before and during the service process.
- the task performed by the user, i.e. what performance actions are carried out by the customer to co-produce the service.

- the surrounding world in which the user performs, i.e. the service environment.

4.6.4 Process design

The development of the customer's service script as a mental model stresses the need for the service process to be designed in a certain way (Edvardsson 1997). The service process design influences the development of the customer's cognitive model. If the service process is designed the "right" way, the user's, i.e. the customer's, learning of and interaction with the system is facilitated. Therefore customers will develop an appropriate user model, i.e. service script which in turn helps them to use the service system and perform during the process successfully (Norman 1983; Norman 1986). In fact, it shows that the service operator has the opportunity to affect the customer's script or rather to help to develop it (Bateson and Hoffmann 1999).

Since the client as a co-producer has to carry out definite activities during the service transaction, the design of those activities and the underlying resources must meet certain criteria. This ensures that the service process is comprehensible and preferably easy to participate for the customer. It is then that the client is able to develop a service script (Edvardsson 1997). Not only the design itself is important but also the way that it is communicated to the user. The service process design – at least that part where the customer interacts with and takes part in the process – influences the customer's script. Consequently, contact personnel, the user interface, documentation, instruction material or help facilities need to be provided. What are the design requirements for a process design? "Ideally, the model is based on the user's task, requirements and capabilities…(and) must also consider the user's background, experience and the powers and limitations of the user's information processing mechanisms" (Norman 1986, p. 47). The process design should encourage and facilitate the customer's performance. It is therefore incumbent on the service operator to provide that the process activities fulfil the following conditions which can be regarded as process 'design heuristics' (Tognazzini 1991):

a) Learnability and feed-back: The actions that the customer has to carry out must be easy to learn. Learnability can be realized by designing the service process in a way that the customer will receive immediate feedback for every action he completes during the service transaction. Feedback can hereby be provided in various ways like

for instance personal feedback by a contact employee or feedback by an electronic signal (Norman 1983; Edvardsson 1997).

b) Consistency and forward guidance: The process design has to avoid any internal contradictions, i.e. it must be clear for the client which activity is required from him at every stage of the service process. All properties of process elements and relations between process activities have to be compatible and exempt from inconsistencies (Manktelow and Jones 1987). Cues must be given that solely one definite action is requested at this point of the service transaction. Any process elements that are not needed for a specific process activity from the customer's view have to be removed in order to minimise the amount of information the customer has to remember (Tognazzini 1991). Forward guidance indicating the client that he is acting correctly can assist the customer when he navigates through the service process. That means, feed-forward instructions or signs can provide predictive power supporting the customer in learning the action sequence (De Kleer and Brown 1983; Edvardsson 1997).

c) Visibility and correspondence: Those parts of the service that are relevant for the client because he has to interact and participate need to be observable. The service transaction design must preferably be visible and functional, abstract and invisible elements have to be avoided (Tognazzini 1991). Thereby, rough instructions, information and directives are always easier to remember for the customer than precise details which calls for support for simple inferences (Forbus and Gentner 1997). Yet, it has to be kept in mind that some process activities require particular details. Instructions, symbols or other references must be easy to follow and the entire course of the service process has to be retraceable. That also involves the correspondence of the actual service process that the customer encounters and perceives and those process features and action sequences that are communicated to the customer (De Kleer and Brown 1983; Norman 1983). The total service process needs to show coherence and process episodes have to demonstrate co-reference so that each process step and element is referring to another process unit which is defined elsewhere in the process design (Manktelow and Jones 1987).

d) Usability and robustness: The service model has to be easy to use for the client. The usability needs to be obvious and bear up against a range of eventualities. Since service situations can be subject to minor or major changes, the client has to be

assured that his actions will still result in the same outcome (De Kleer and Brown 1983; Norman 1983).

e) Controllability: Throughout the service transaction the customer needs to perceive that he retains control – not only over his own activities but also over the course of the service process in general. At every stage of the action sequence it has to be arranged for control opportunities so that the customer is able or apprehends to be able to influence and regulate the service process and the service system (Edvardsson 1997).

In a more general way, employed process design can include all kinds of cues and instructions that make it easy for the customer to interact with the service system. Since the development of cognitive models is based on existing knowledge, analogies are an essential tool to design a service process. Process design has to identify suitable existing knowledge and present relevant information about the system in the context and form that supports the development of the customer script (Sasse 1997). Since individuals tend to draw on relevant existing knowledge when developing mental models, process design which does not fit with existing knowledge is less likely to be adopted as a model. Successful adaptation of an existing model into an appropriate customer's model depends on whether similarities and differences between the existing model and the new system have to be clearly communicated (Manktelow and Jones 1987). The use of analogies as a process design tool is therefore restricted to customers who already have knowledge of a similar service (Sasse 1997).

EXKURS: Servicescapes

The servicescape is understood as the physical setting in which a service encounter takes place; yet, in an expanded definition the social environment can also be regarded to be part of the servicescape (Baker, Grewal et al. 1994; Bitner 2000). It embraces the user interface, i.e. the interface apparatus between the customer and the service provider, atmospherics, physical design and décor elements (Bitner 1992). Pointing out that the physical complexity of a servicescape can vary, ranging from rather lean to more elaborate, Bitner (1992) distinguishes different dimensions of the servicescape:

- ambient conditions like temperature or sounds,
- spatial layout and functional equipment as well as
- signs, symbols and artefacts

Whereas many elements of the first dimension are particularly relevant in business-to-consumer environments with event and entertaining services for instance, the second and the third dimensions apply to all kinds of service types. Mostly, it is not a single element that defines the servicescape but rather the arrangement of the entire environmental dimensions. Even though the relevant dimensions can be isolated, they add up to a holistic environment perception that people respond to (Bell, Fisher et al. 1978).

With regard to customer performance the dimension of spatial layout and functionality is essential (Bitner 1992). Whereas spatial layout relates to the configuration of machinery and equipment, for example, functionality relates to how much these elements can be used to facilitate performance and goal achievement. This dimension corresponds to the service system following Edvardsson (1997); the criteria necessary to enhance customer performance comply with the conditions for the evolvement of mental models, as for instance usability and visibility (as in the same section 4.6). The third dimension of signs, symbols and artefacts, as well, can enhance customer performance, for instance by offering hints to the client of what do next, e.g. an arrow to indicate a direction where to go. The servicescape can act in the role of a facilitator. The design of the physical service setting is able to boost or to hinder the flow of activities in the service process. It can facilitate or hamper the customer's goal accomplishment (Titus and Everett 1996). Whereas poorly-designed facilities can lead to frustration of both customer and employee, an well-organized design and functional facility can result in an efficient customer performance and therefore an unobstructed and productive service operation (Bitner 2000).

The servicescape has a guiding function and can influence customers' as well as the service provider's actions (Storbacka 2001). Organizational behavior research implies that the servicescape can impact the employee satisfaction, motivation and productivtity (Sundstrom and Altman 1989). If customers are considered as partial employees (Lovelock and Young 1979), as stated earlier, and the physical environment can influence human resource, the users of the servicescape, i.e. employees but explicitly also customers, can make use of physical spaces and objects and benefit operations goals like efficiency (Bitner 1992; Aubert-Gamet 1997).

Since services show a small proportion of search qualities but a high proportion of experience and credence qualities instead, few intrinsic cues can be found. Therefore, the elements of the

servicescape act as surrogate indicators and signal extrinsic cues (Zeithaml 1988); they offer hints for the customer how to behave, what to do and where to navigate during the service process. Lacking verbal or tangible clues can cause disorientation of the customer because the client does not get sign-guided through the service system and so, does not know how to act or where to go (Johnston 1999). The physical environment of a service setting embodies a set of social rules and principles (Barker 1968; Forgas 1979) that can delineate social interaction.

Cognitive responses may be elicited in a customer through the perception of a servicescape (Kaplan and Kaplan 1982). Not only can the customer script itself be supported by the servicescape but it also sustains the idea that customer and service employee both have a script and they have to intertwine to ensure a smooth interaction process during the service encounter (Storbacka 2001). The customer can develop "cognitive maps"[67] of the layout and other elements of the physical environment (Lang 1987). Clients move through the servicescape and follow a physical and psychological path; at various points of the service process, they may interact with the servicescape and the employees who are involved in the service delivery (Wagner 2000). Some approaches postulate the integration of the customer as a component of the service environment and consider the client as a co-builder of the physical setting (Aubert-Gamet 1997). That perspective supports the standpoint to regard the client as part of the service process as claimed in the focus of this thesis.

4.7 The customer process: A summary

Due to the quite extensive scope of this chapter, this section is to deliver an overview of the key variables which will be taken up again in the next chapter and thus form the basis for the conceptual model of the empirical study. The chapter started with a rather broad explanation of the customer process. Since the term "customer process" can be interpreted in many ways, the reader was given a clearly differentiated definition.

First, this definition was to clarify the fundamental understanding that the thesis is based on. Therefore, it was directly linked to the two foregoing chapters, referring to the upper part of the service blueprint. As the phrase "trans-action" already reveals, transaction cost theory

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[67] Environmental psychology deals with the nature of cognitive maps, the process of acquiring and forming cognitive maps and their use in processes. For further literature: e.g. Grossbart et al. (1975), Sommer and Aitkens (1982), Wohlwill (1976), Yalch and Spangenberg (1988), Saegert and Winkel (1990), Bonnes and Secchiaroli (1995).

relates to an operation between two parties. The second chapter had only discussed one side of it, namely the supplier side of the process. On the contrary, the third chapter attended to transaction cost theory and the interaction between both process parties, exposing that transaction costs evolve due to misdirected or insufficient customer integration and thus increased coordination activities. Therefore, this fourth chapter was to analyze the customer process as the counterpart and missing component in order to complete the transaction cost perspective.

Second, the clarification of the customer process provided the basis for the then following explanations of constructs from cognition-theory. After laying the foundation in order to show the reader where cognitive constructs like customer scripts can be subordinated, the chapter became a bit more specific: The role and the impact of the customer within the service production process were pointed out with reference to process success[68]. In the following, it was continued with learning theories as the very indispensable basis to cognition in the broadest sense. Knowledge, as a result out of the learning process, was then taken up next. As customer knowledge is considered as a direct predecessor and prerequisite of script development, it was given special attention and included the explanations of customer expertise. Next, the actual concept of scripts, as a sub-form of schemata and at the same time core subject of the study, was described. For a more elaborate characterization, customer service scripts were also considered with the background of routines and role-theory. Finally, customer scripts were identified as mental models. Consequently, they are affected by the service provider's process design which completes the range of key variables used in the empirical study.

Customer knowledge and process design, assumed to influence script development, can be considered as indirect instruments to facilitate the coordination between the supplier and the client. Hence, they have an immediate effect on the level of transaction costs. Whereas customer knowledge is customer-specific, process design is an external aspect, i.e. implied by the service provider. With optimal customer knowledge and optimal process design, the customer process works presumably well; that means the customer can develop a script and thus is able to co-produce in the service process which keeps transaction costs at a minimum. This shows that both parties have the power to affect the level of transaction costs. On the

[68] Here, process success was first of all implying the customer function with regards to the process efficiency as it is based in the explanations of transaction cost theory (chapter 3).

other hand, it is to find out what such a scenario means with regard to the service outcome, i.e. the success of the process. The empirical study will therefore be extended by the outcome variable of process success, including not only the efficiency aspect of the service process as rooted in transaction cost theory but referring to service effectiveness, as well. Although service effectiveness as the outcome variable of the process does not originate in TCE (see thereto Fließ 2001), it will be included in the study seeing that service process management always needs to take both objectives into consideration, i.e. efficiency and effectiveness of a transaction (see also Ivens 2006). This particularly applies when taking on a customer perspective as any service provider's maxim of customer orientation would demand.

EMPIRICAL STUDY

5 The conceptual model

In the preceding part of the thesis, the theoretical framework was developed and relevant variables were identified. Those variables were also explained as they were generated from the research literature examined. The next step is now to design the research study accordingly so that the essential data can be collected. By means of gathering and analyzing that data, the chosen model can be tested in terms of fitness, suitability and applicability to problem situations such as the one under consideration.

Therefore, this chapter leads from the theoretical argumentation into the empirical part of the thesis. First, general research aspects will be described which are needed to understand the use of the methodology further on; in summary, those aspects are the research questions, the hypotheses, and the model framework. After expounding the methodology in detail, data will be analyzed and finally interpreted for the purpose of the study.

5.1 Research aspects

The research model and the hypotheses which will follow can be derived from the theoretical findings of the first part of the thesis. The detailed elucidation of the theoretical constructs and their coherence fosters a comprehensive understanding of the entire empirical study.

Research conducted in the area of business and economic science might be described as "a systematic and organized effort to investigate a specific problem encountered in the work setting, that needs a solution" (Sekaran 2003, p. 5). To sum it up in one simple definition, it can be characterized as a process to find an answer to an issue that is conducted through study and analysis of significant influencing factors. To understand research therefore means to understand theory, identify critical issues and relations between theoretical constructs, collect and analyze data and then find the right way to apply and implement the results in practice. In order ultimately to solve problems, research has to be carried out systematically and it is important to expand the single research steps in an organized and scientific way.

In research, two types of purposes can be differentiated: applied research on the one hand and basic research, also known as fundamental or pure research, on the other hand (Hedrick, Bickmann et al. 1993; Gibbons, Limoges et al. 1994; Easterby-Smith, Thorpe et al. 2002).

The former type is defined as "research of direct and immediate relevance to practitioners that addresses issues they see as important" (Saunders, Lewis et al. 2003, p. 473); here, research is done with the intention of acting upon the results (Starkey and Madan 2001). In contrast, basic research is undertaken with the intention of generating a body of knowledge. The understanding of certain phenomena, processes and problems that usually come about in organizations, for instance, should be enhanced. At the same time, the attempt is made to find methods of solving these problems so that the outcomes of this research type can contribute to the body of knowledge in a range of functional business areas or industries. Even though such a research undertaking is predominantly directed towards a more academic community, it is often applied subsequently in organizational settings for the purpose of problem solving. However, both types of study follow the same systematic and scientific mode of conducting the research.

The study in this thesis was undertaken in a real practice environment, i.e. in an industry service company. It can therefore be considered to serve both purposes, fundamental as well as applied research, focusing on a thorough theoretical basis while concurrently being of practical relevance (Hodgekinson, Herriot et al. 2001). From a theoretical perspective, there is a contribution to the existing literature in terms of the extension of the blueprint dimensions, the detailed discussion of scripts (including script-forming as well as script-influencing factors), and the view of scripts in the context of transaction costs and customer integration. At the same time, the thesis embraces the world of practice in a twofold way: first, the service company being considered as the direct unit of research can directly make use of the study results and implement them in business. Second, the process design criteria as identified from the literature and tested in the study may be applied to different industry environments and can be transferred to various service settings. This result would substantiate the argument that "business and management research not only needs to provide findings that advance knowledge and understanding, it also needs to address business issues and practical managerial problems" (Saunders, Lewis et al. 2003). Besides, it supports the demand for a stronger cohesion between academic theory and practice in general instead of separating these two fields from each other.

5.2 The research questions of the empirical study

In the theoretical part several constructs were discussed. The most relevant ones - that is, the customer's knowledge in terms of foreknowledge and expertise, the process design for building up the customer's mental model, and the customer service script – shall now be tested in a concrete service environment with reference to process success. Before entering the actual testing phase, the research problem and the aim of the study needs to be clearly defined.

The research problem embraces the service provider's process and the customer's process in a service transaction. Up till now, service process documentation as in the blueprint has been limited to the service provider's side. Even though the customer's role as co-producer of the service is of high relevance, customer activities in the blueprint are reduced to the line of interaction. In order to optimize the service interaction between service provider and customer and to facilitate customer integration, the customer process must be put into a stronger focus. Only then can coordinating activities between the two parties be reduced and, thus, transaction costs be minimized. Whereas supplier processes are deliberately structured in the form of a service blueprint, customer processes cannot be grasped in exactly the same way. An equivalent of the blueprint needs to be found to depict and explicate what happens on the customer side. However, such an equivalent must be compatible with the service blueprint. It would need to deliver the counterpart of the blueprint and, at the same time, offer the chance of extending the blueprint dimensions and developing the previous transaction cost perspective somewhat further.

Since the search for such an equivalent leads to the construct of cognitive scripts, this field needs to be discussed thoroughly and influencing factors have to be examined. In this context, the service provider's process design takes on a highly important role. Just as it is essential for the service provider to design the company's internal process activities, so there is also a crucial need to find methods that help to build up and to affect customer service script development. Only then is an integrative process view on the service transaction provided and the alignment of customer and service provider processes can be realized, which helps to keep transaction costs at a low level. In brief, customer processes can be summarized as the research problem of this thesis. Yet, in order to examine customer processes from a comprehensive and integrated perspective, the overall service process has to be taken into consideration, given that it comprises and affects the customer process. In addition, we can

therefore extract the following disciplines as relevant for the research problem: customer integration (section 2.2) including the service blueprint (section 2.5), transaction cost theory (chapter 3), and script theory (esp. section 4.4) including mental models (section 4.6) as the 'core theories' (Phillips and Pugh 1994) or 'immediate disciplines' (Perry 1998). In contrast, service operations management (section 2.4), learning theories (section 4.3.1), schemata (section 4.3.3) and role theory (section 4.5.3) can instead be regarded as 'background' (Phillips and Pugh 1994) or 'parent' fields (Perry 1998). As a result of the reflections concerned with the problem area and the cause of undertaking the study, four major research questions are found to be relevant:

The first research question analyzes whether customers actually have a consolidated script of the service process. It is based on assumptions from cognition theory according to which individuals perform their actions based on their underlying process script – no matter if it concerns an everyday situation, a service situation or any other specific event. Therefore, the first research question tries to analyze how precise the customer's idea of the service transaction process is. It is necessary to examine whether the customer performs his/her actions during the service process automatically and knows what to do and when to do it.

The second question focuses on customer knowledge as a potential influencing factor that supports the customer's script development. In this context, it is necessary to explore how experienced the customer is and whether the customer enters the service process with some kind of foreknowledge. Customer knowledge therefore refers to the customer's level of expertise. Most of all, this question attends to the possible effect that the customer's knowledge might have on his/her service script.

Another potential influencing factor is considered in the third fundamental question. Here, the service provider's process design shall be examined thoroughly. Five major criteria are presumed to play an important role in process design: in summary, these criteria are learnability, consistency, visibility, robustness, and controllability of the service process. Therefore, this question tries to find out if the service process takes these features into account and if the process design has an effect on the customer service script. The issue of interest is the service provider's attempt to engineer, impact or even manipulate the customer process by way of designing the service process in a certain manner.

As the fourth essential subject, the process success of the service transaction is considered. In this context, process success is understood as customer satisfaction, on the one hand, i.e. as a term for service outcome and thus service effectiveness, and process efficiency in terms of time, on the other hand. This question tries to examine whether there is a relation between the customer script and the success of the service process. In addition, it can be analyzed whether there might be any relation between the process design and the process success.

The four thematic blocks of questions described will be tested empirically by invoking different angles. In part, the questions will be analyzed from the perspective of the customer, whereas other elements will be gathered from a perspective within the service company.

5.3 The model framework

After defining the research problem, the conceptual model needs to be framed to theorize the relationships among the constructs which have been identified as important to the problem. Such a model helps to understand the dynamics of variables[69] in the research situation and thus to postulate the research hypotheses as they will be set up in section 5.4. Consequently, the model framework offers the conceptual foundation to carry out the empirical study (Sekaran 2003).

In this work, four major concepts[70] will be considered: the customer knowledge and the process design as independent concepts, the customer script as a dependent concept which at the same time influences another dependent concept, process success (see Figure 5-1)

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69 One exemplary definition of a variable is as follows: "Individual element or attribute upon which data have been collected" (Saunder, Lewis et al. 2003, p. 492), applying at the same time for different objects or persons.

70 This thesis follows the operational definition of concepts, dimensions and elements (see also section 6.10) according to which a concept, for example process design as mentioned above, would consist of different dimensions, such as transparency, which – in order to operationalize the concept - can then be translated into measurable elements (sometimes called items). These elements then appear as questions in a questionnaire. Yet, those factors in the model can also be termed variables as a more general term that is applicable in a wider range. Sekaran (2003) gives the following examples of variables: production units or motivation. A variable like motivation which forms a complete construct must be operationalized with different items. Some authors therefore denote each item again with the term 'variable'. It shall be noted that even though dealing with similar constructs like motivation, e.g. customer knowledge, in this thesis they will still be called variables.

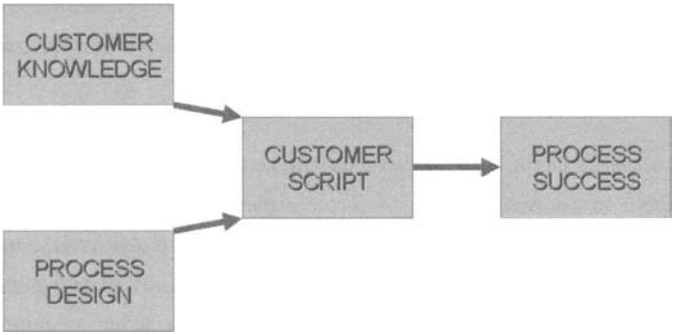

Figure 5-1: The model framework

In order to categorize the variables of the study, we will follow Dillman's typology (Dillman 2000) according to which three types of data variables are distinguished: opinion, behavior and attribute variables. Whereas opinion variables relate to what the research object, e.g. respondents, feel, think or believe about something, behavior variables contain data about what research objects do and experience. Attribute variables interrogate the characteristics which the research objects possess. With reference to these types, the four variables above can for the most part be classified in two categories: customer knowledge is characterized as an opinion as well as a behavior variable because it reflects what the customer thinks as well as what the customer has experienced in prior service situations affecting his/her level of expertise. Similarly, the customer script can be considered as both opinion and behaviour variable: it relates to how the customer feels about the service process procedure but at the same time it concerns the customer's service encounter in the process situation. In contrast, the process design is, rather, a pure opinion variable, stating what the customer feels and perceives the design of the service activities to be. Process success can be regarded as an opinion variable in terms of customer satisfaction as well as an attribute variable in terms of process efficiency. Referring to the latter, the service processing time as a measure of process efficiency clearly indicates characteristics of the service process.

Scripts as a form of customer learning are based on current information input within the process as well as knowledge and experience (Gan 1991). Two main factors were therefore identified as having major influence on script development: the first one is customer knowledge and can be considered as an internally motivated factor, in the sense that it is

rooted in the customer's own commitment and level of experience. Customer knowledge includes the direct service knowledge as well as the degree of being informed, encompassing both service-related knowledge, such as experience with similar service settings, and also customer experience in terms of expertise.

In contrast, the second concept is externally motivated, i.e. it refers to the service provider's influence on the customer script. Based on the awareness of the content of customers' schemata and mental models as outlined above (chapter 4), service providers have two basic opportunities to profit from script-use. Either they make use of the scripts, as they may find that there is no influence other than that the expectations in the script are fulfilled and satisfaction is optimized. Consequently, they adapt their own internal processes according to the customer script. Or, the provider actively attempts to affect or manipulate the customer script by teaching the customer a new script that may help to optimize in-house production while lowering transaction costs. The following five dimensions can be identified as influencing the formation of scripts for the concept of process design (De Kleer and Brown 1983; Gentner and Stevens 1983; Johnson-Laird 1983; Norman 1983; Edvardsson 1997):

- Learnability, i.e. does the service process provide sufficient feedback for the client so that it is easy to learn?
- Consistency, i.e. is this service process perceived as coherent and clear, and does it provide the client with feed-forward guidance?
- Visibility, i.e. is the service process transparent and observable, and do the elements correspond to existing patterns of knowledge?
- Robustness, i.e. is the service process easy to use and, at the same time, strong enough to withstand changes?
- Controllability, i.e. does the client perceive the possibility of intervention, control and influence on the service process?

The third concept relates to the two previous ones and describes the customer script as such. Overall, it considers the customer's precise process image of the service. It comprises the three dimensions of script intensity, script complexity and number of scripts (Schank and Abelson 1977; Tansik and Smith 1991).

Two further concepts are summarized in the term 'process performance success' and are influenced by the customer script. They are process efficiency in terms of time, and customer

satisfaction. Whereas the former can be measured directly, the latter concept relies on the service quality dimensions of tangibility, empathy, reliability, responsiveness and assurance (Parasuraman, Zeithaml et al. 1988) as will be explained later on (section 6.10).

5.4 The research hypotheses

In accordance with the questions discussed (section 5.2) and the model framework expounded above, the following hypotheses[71] can be put forward.

- Hypothesis 1:

Customer knowledge, i.e. the customer's existing knowledge and expertise when he/she enters the service situation significantly influences how strongly established the customer script is.

- Hypothesis 2:

The process design of the service provider, i.e. to what extent certain criteria apply to the service process design and particularly to the customer interface, significantly affects the customer script.

  - Sub-Hypothesis 2A: The more learnable the service process activities, the more established the customer script.
  - Sub-Hypothesis 2B: The more consistent the service process design, the more established the customer script.
  - Sub-Hypothesis 2C: The more visible the service process activities, the more established the customer script.
  - Sub-Hypothesis 2D: The more robust the service process design, the more established the customer script.
  - Sub-Hypothesis 2E: The more controllable the service process appears to be, the more established the customer script.

- Hypothesis 3:

The customer script significantly influences the service process success.

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[71] A hypothesis can be understood as "a logically conjectured relationship between two or more variables expressed in the form of a testable statement. Relationships are conjectured on the basis of the network of associations established in the theoretical framework formulated for the research of the study" Ibid.

- Sub-Hypothesis 3A: The more established the customer script, the higher the customer satisfaction.
- Sub-Hypothesis 3B: The more established the customer script, the higher the process efficiency.

As the hypotheses adumbrate, the relationships between the variables (see also Figure 5-1) will only be tested as bivariate relationships. The complete model with the consideration of all internal interdependencies and relationships will not be examined in the context of this thesis but is recommended for further studies (see also sections 9.2 and 9.3).

6 Methodology

The methodology, attending to the way data is collected, will be used to answer the hypotheses. First, a pre-test study will be outlined which was conducted at a preliminary research stage to help devise the research question and in order to test if a script construct can generally be assumed as existent. After that, the basic aspects concerning the main study and the study design will be described in detail. General research design elements such as purpose and type of investigation, as well as basic paradigms and ethical issues, will be discussed thereafter. Apart from general aspects, the main focus of this chapter will be the explication of the triangulation method, the operationalization of the variables and the quality of the measures.

6.1 Pre-test study (MBM)

Before the actual study was undertaken, a small exploratory study was carried out in the form of an experimental group design. This initial work was done to gain familiarity with the phenomenon of scripts and the better to comprehend the nature of the problem. In general, exploratory studies are a useful way to find out what is occurring and to obtain a suitable grasp of the phenomenon of interest (Sekaran 2003). Even though some aspects were known about scripts, more information was necessary in order to clarify understanding of the problem area. Prior to developing a viable theoretical framework the researcher had to ensure that the field of scripts was worth pursuing. The initial research idea was to examine whether customers in service situations develop scripts. Yet, it was clear that this idea needed to be refined in order to turn it into a research project. Thus, in order to test the author's research idea and help formulate research issues, a preliminary study was done (Bennett 1991).

This preliminary study was undertaken in form of an experimental group design. Its purpose was to investigate the development and the contents of clients' scripts. Therefore, it was necessary to obtain details about the experiences, perceptions and expectations of the candidates as well as the key factors of scripts that had been identified from the literature so far. The study covered a period of one year which corresponds to the duration of the post-graduate course "Master of Business Marketing (MBM)"[72]. The target group, the students of the post-graduate program, consisted of a group of 40 engineers who were all university

[72] The course of study MBM was formerly known as "Weiterbildendes Studium Technischer Vertrieb" (a postgraduate diploma in technical sales)

graduates and also had several years' professional experience[73]. The study program embraces four phases of correspondence courses and four phases with obligatory attendance consisting of seminar blocks of five days each[74]. In the correspondence courses, texts have to be studied and exercise questions have to be solved that are sent in to the program supervisors. During the seminar blocks, the candidates were requested to fill out a questionnaire, on the first and on the last day of the attendance period. They were asked not to pose any questions either about the action itself or about purpose and outcome, in order to stick to the experimental aspect of the study. In addition, they were assured of anonymity and informed that they would be enlightened about the outcome by the end of their year of study. To protect the candidates' anonymity during the study, they were allowed to use code names or digits so that each candidate kept the same code in all questionnaires. Since the group of candidates remained the same throughout the year, a continuing development of responses could be recorded over the whole period; also due to the code names, opportunities for comparison were given between the single candidates.

The study was done by way of self-administered delivery and collection questionnaires. All questionnaires were standardized with open questions covering the following topics:

- Experience in terms of further training/ postgraduate education
- Expectations, objectives, demands and wants with regard to the course of study
- Expectations regarding the process of activities during the MBM program
- Expectations regarding the faculty
- Expectations regarding the candidate's own role and actions
- Expectations regarding the role of fellow students
- Expectations regarding the setting in which the course of study takes place
- Activities during the periods with obligatory attendance
- Activities during the correspondence course

Only the last questionnaire, handed out during the third seminar block, included some additional scale questions. Several answers from the preceding questionnaire responses had

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73 In contrast to their original training in engineering science they were now all practising sales activities in their daily work. The MBM course of study imparts marketing knowledge. All candidates can gain the degree of a Master of Business Marketing if they pass all exams and pay the required course fees.

74 The phases with obligatory attendance take place about every three months as introduction seminar, middle seminar I, middle seminar II and final seminar. In total, questionnaires were handed out six times, that is, two during each of the first three seminar blocks, whereas the final seminar as the last seminar block was used to present the results of the study to the participants.

been classified into categories; these categories were now listed in the final part of the questionnaire and respondents were asked to mark if they felt that the respective statements were correct, wrong or somewhere in the middle of both ratings. The majority of questions related to the course of events during both types of study periods and the other key factors of scripts which were identified through the research literature. The experimental character manifests itself by a comparison between target expectations and the actual perception of the study process. Since questionnaires were handed out twice during each period, i.e. at the beginning and at the end of each seminar block, it was possible to compare initial expectations and the view on the topics after some experience. The "effects of treatment", as the term is used in the context of experimental designs (Sekaran 2003), can be seen in the candidates' exposure to the actual course of study during the entire year.

As a résumé, it can be said that during the time period of the MBM program respondents developed a kind of process image of both correspondence course and seminar block, i.e. the phase with obligatory attendance. For the candidates, several process sequences seem to have become particularly established and manifest over time: working on the exercise questions to be sent in, regular time-keeping to cope with the general study workload, regular time-keeping for text comprehension and exercises, contacting the program supervisor. Therefore, this preliminary study was very helpful for the demonstration of the existence and the development of customer scripts. First, it raises the question of script-influencing factors or conditions, second, the problematics for testing on a broader basis and in a different service sector from educational services are inherent in it. It has been shown through the preliminary study that the flexibility implied by exploratory research does not necessarily indicate a lack of direction within the study; rather, it refers to an initially broad area of interest which becomes more focused in the later stages of the research process (Adams and Schvaneveldt 1991).

Since the preliminary study revealed interesting patterns with regard to the idea of scripts, the researcher was encouraged to pursue the research further. The exploratory study helped to gain new insights and to advance knowledge so that subsequently a rigorous design for comprehensive research could be set up. In this way, it was possible to develop a theoretical model as a basis for formulating and testing hypotheses (Saunders, Lewis et al. 2003; Sekaran 2003).

6.2 Purpose of the main study

The core intention of the main study is to test hypotheses and examine to what extent the presumed relationships between the constructed variables can be substantiated or if they have to be rejected entirely. The framework model as delineated in section 5.3 serves both purposes: it depicts an analytical tool to explain the structure of the variables and therewith the theoretical basis of the thesis. But assuming that the hypotheses can be proved, it also offers the potential – up to a certain degree - to predict developments of the dependent variables by manipulating either of the influencing factors. The former aspect is primarily of interest for the understanding of the script phenomenon and for generating knowledge in that theoretical discipline. In contrast, the latter consequence is of particular relevance for business decisions applied in practice.

The explanation above also entails a statement regarding the type of investigation, i.e. causal or correlational (e.g. Sekaran 2003). Whereas cause-and-effect relationships demarcate factors that are definitely responsible for causing a certain problem, correlational studies aim at identifying important factors that are associated with the problem being considered. Applied to the model of this research, the manipulation of process design and customer knowledge, for example, would result in a perfect and complete customer service script. Since the origin of scripts as a construct can be found in cognitive psychology, their background as a 'soft' factor needs to be taken into account. As is often the case in an organizational environment, it is not only one or more variables that 'cause the problem' or the condition of the customer script. Instead, multiple factors influence script development. These aspects particularly apply to 'soft' factors like cognitive constructs. Since scripts, above all, are far from being concrete or tangible, there will always be hidden influence from other features and dynamics that cannot all be captured in one model.

Based on those assumptions, the thesis does not conceive the framework model to be complete. It rather seeks to point out the essential structure of script development and to explain how the identified variables of customer knowledge, process design, customer script, and service process success are linked to each other. Also, the model, and primarily the variable of process design, suggests the chance for the service provider to affect the customer script. Therefore, it seems more important to recognize the crucial factors linked with script establishment rather than to set up a cause-and-effect relationship.

As a result of the reasoning above, the research being considered can be defined as an explanatory study (Robson 2002) because its purpose is to establish causal relationships between the variables of customer knowledge, process design, customer service script, and process success. Thus, the study aims at explaining the relationships between the adduced variables by studying the service situation.

6.3 Empirical study and its paradigms

At least to some extent, all scientific disciplines use empirical research. Unlike natural sciences, business research in the tradition of a social science (Remenyi, Williams et al. 1998) can rarely invoke material objects like bacteria, blood or rock samples under the microscope to understand, test and explain reality. Therefore, particularly for the kind of research applied in social sciences, it is important to find appropriate methods for the elucidation of business phenomena. As such, research requires an underlying paradigm to follow so that assumptions concerning reality can be applied adequately.

6.3.1 Philosophic research paradigms

Positivism, interpretivism and realism form the main research philosophies paving the way for the development of knowledge and scientific findings (Saunders, Lewis et al. 2003). Whereas the stance of positivism advocates for objective analyzes, value-free data interpretations, and complete independence of the researcher as well as universal generalizations of the research results, interpretivism really stands for the opposite. Positivism basically follows the approach of a natural scientist; in contrast, interpretivism leaves room for the details of the situation, subjective interpretation of meanings, and a resulting social constructionism[75] [76]. Based on the view of a complex and unique social world, it holds against the positivist belief that there are definite laws affecting everything the same way. Interpretivism argues that businesses, in particular, do not only represent complex worlds in themselves but - as a function of a special set of circumstances and individuals – they also imply the complexity and the uniqueness of business situations (Remenyi, Williams et al. 1998).

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[75] For an introduction into ‚social constructionism':see e.g. Burr (1995), Parker (1998).

[76] In this context, it shall be remarked that the constructivist approach carries an interesting thought with regard to the understanding of services: According to Aubert-Gamet (1997).

Social constructionism holds the opinion that individuals prefer sharing interpretations of their socially constructed environment which again affects the way people construct their reality in the first place. The principle that a reality exists independent of human thoughts and beliefs is part of the philosophy-approach of realism (Smart 1963; Wright 1993). Transferring this idea to business environments can be expressed as follows: Without being aware of it, market actors', i.e. customers' or suppliers' interpretations, behaviours, and perceptions of their business world are affected by social processes and forces on a large-scale like comprehensive market mechanisms. Or specifically in services, the service works best if customers' and providers' share the same service script. But their perceptions of the service process is influenced by overall service aspects and process elements which are real, e.g. standardized procedures in a call-center, an identical course of events on a webpage, the uniforms of flight attendants etc. In contrast, pure positivism reflects a service with only those standardized elements and does not consider that if scripts on both sides vary, the service process as well as the outcome may vary, too. And finally, in an exclusively interpretivist world, there is no such thing as any standardized service elements; every service situation completely depends on the interpretations and meanings of the actors.

As indicated earlier, the research philosophy can be considered as guiding the research strategy of the study. Whereas a positivist research philosophy promotes experiments or surveys, i.e. quantitative research, interpretivism supports qualitative research like action research[77], and realism tends to encourage case study methods[78], for instance. Yet very often, research can simply not be classified as one precise philosophical domain. Especially in business and management research, a mixture between positivist and interpretivist or realist stance may be the case (Saunders, Lewis et al. 2003). Pursuing a research strategy of methodological diversity or triangulation, as will be explicated in section 6.9, the author holds the opinion that it is essential to take a more flexible view on the research approach and the adopted methods. As an alternative, the main focus should be set on creating a comprehensive basis to understand reality by relativizing scientific theory approaches and the application of empirical methods.

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77 e.g. Zuber-Skerrit (1996), Thornhill, Lewis et al. (2000), Coghlan and Brannick (2001).

78 e.g. Yin, R.K. (1994).

6.3.2 A relativistic view on scientific realism

Fundamentally, empirical research features the testing of assumptions that intend to explain reality by, in turn, applying appropriate methods to reality (see Figure 6-1). The purpose of explaining a phenomenon is to understand it. According to Hunt (2002) a phenomenon needs to be explained in a scientific way in order to be understood scientifically. Besides, it needs to be recognized that reality is always complex, dynamic, unique and – at least to some extent – concealed (Jacoby 1985 according to Kuß 2004, p.18). This implies that empirical research is merely able to consider excerpts of reality. Following the line of argument above, the next step involves the clarification of a 'method': They represent the link between theory, i.e. concepts[79] and hypotheses[80], and reality by helping to measure and analyze relevant phenomena. When results of the data analysis are then compared to the theoretical assumptions, they can be confirmed, rejected or modified. The following figure illustrates the line of argument:

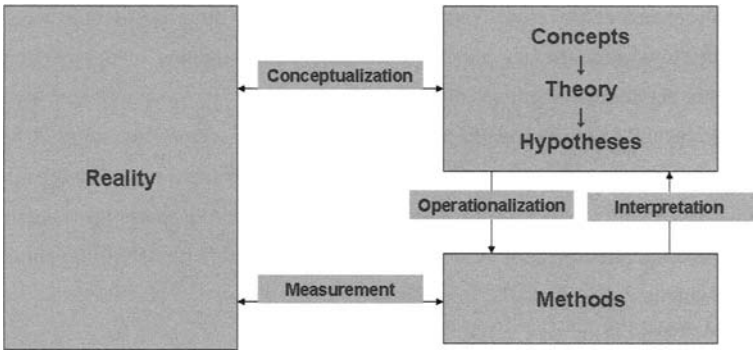

Figure 6-1: Model of empirical research (in dependence on: Kuß 2004, p.23)

Methodical understanding of phenomena needs to acknowledge that scientific findings and research standards always depend on time and scientific setting; they can therefore only be considered as relative (Peter 1991; Peter 1992). That view is anchored in the belief that empirical data is always burdened with theory which cannot only be said about social sciences in particular but to a certain degree it even applies to natural sciences. Theory varies for

[79] A concept in form of an idea shall be understood as the abstraction of certain elements of reality, functional and appropriate for the respective point of view (Kuß (2005). Concepts are then transformed into theory and finally into hypotheses.

[80] Hypotheses are suppositions concerning the form of and the context between variables. Hypotheses evolve based on theory, experience and previous (explorative) studies Ibid. They need to be operationalized in order to develop methods.

example with background or environment in terms of era, time and society. According to that a scientific proposition can be true but does not necessarily have to be certain (Siegel 1956 according to Kuß 2005). That means, a phenomenon or process found to be proven in one business area, industry or situation does not automatically to the entire business world. The author agrees with such a relativistic perspective. It claims that scientific findings can rarely ever be based on purely objective criteria even if the researcher intends to do so by adopting a positivist research philosophy and a more quantitative research strategy. Research must therefore be considered as a social process which is, at least in parts, subjectively affected (Peter 1991; Peter 1992).

Relativism results in a scientific realism which can be differentiated into various paths. For the purpose of this thesis, two tracks seem to be relevant: fallible realism and critical realism. The former claims that research science is obliged to gain accurate knowledge about the world even though that knowledge can never turn into complete certainty. The latter form of realism is characterized by critical examination and testing of all scientific statements in order to determine to what extent they coincide with the world or not (Hunt 1990; Hunt 2002). Such a relativistic perspective implies to take countermeasures by implementing a methodological variety. Applying a range of methods brings theoretical and empirical study closer to the understanding of reality because it increases the credibility of research findings in terms of reliability and validity (Rogers 1961; Raimond 1993). It therefore shows that a more flexible view on research philosophy as well as research strategy can definitely bring about a more valuable outcome.

6.4 Time horizon

Unlike the longitudinal studies of experimental designs where data is collected before and after a manipulation, most field studies are conducted in a cross-sectional manner as it applies to the research under discussion. Cross-sectional research is best defined with "the study of a particular phenomenon (or phenomena) at a particular time" (Saunders, Lewis et al. 2003, p. 96) where data is gathered just once over a period of weeks or months with the purpose of answering the research question. Here, the phenomenon mainly relates to the incident of customer's service script. That and the other variables, as well, were to be examined at the moment of the study. None of the study setting was to be manipulated at any time so that there was no need to compare the development of the variables at different stages. As such, it

does not intend to exclude the fact that additional research may be done in future research projects, e.g. comparing customer scripts before and after a modified process design or the implementation of certain organizational actions.

Very often, time and costs also play a major role for the decision to select a cross-sectional strategy (Robson 2002). Since the research problem was not purely fundamental but of practical relevance for the company with which the study was done, there was also an urge for a rather prompt solution to the research apart from the author's own time constraints. The data for the main study of this thesis was basically gathered at once, although the data collection stage spanned over a period of several months – first, because a triangulation method was used, second, because of practical reasons with regard to the time needed. Since the researcher conducted all expert interviews as well as most of the survey herself, a few weeks were necessary for the telephone survey. A further few weeks were needed for the expert interviews – personal as well as via telephone – because the appointments could not be set straight after each other and again, several weeks were needed to assemble the documents and relevant information required within the context of the content analysis.

6.5 Study setting

This chapter deals with the kind of setting in which the research is conducted. Two major types of study settings can be differentiated: contrived and non-contrived. Whereas the former kind relates to an artificial research situation, the latter one takes place in a natural environment with a normal work-proceeding background (Adams and Schvaneveldt 1991). Like the majority of correlational studies, the one being considered, too, is done in a non-contrived setting in contrast to most causal studies which are done as an experiment in lab settings (Robson 2002). For that reason, correlational studies conducted in organizations are called field studies whereas studies that are done in the non-contrived environment of the employees to test cause-and-effect relationships are called field experiments (Sekaran 2003).

As mentioned earlier, the study of this thesis was conducted in a non-contrieved setting. All intra-organizational expert interviews were made within the natural environment of the company where work for the interviewees proceeds normally. The persons were questioned in their own offices or at least within the company department surroundings they belong to. The same applies to the expert group discussion which was done in form of a round table in the company unit manager's office. In the context of the customer survey, customers were

contacted in their office so that the telephone calls, too, took place within the natural environment of the customer's workspace.

The study undertaking, i.e. causal or correlational, and hence the study setting also affect the extent of researcher interference with the study. The researcher's interference with the study refers to the extent of disruption with the normal workflow (Ghauri and Gronhaug 2002). In this work, the correlational type of study as well as the non-contrieved settings also imply a minimal extent of researcher interference. Since the company interviews within the organization were conducted during working hours and the persons were asked to determine date and time suitable to them, the only aspect of disrupting their working routine was the calendar entry for the interview date. No other details were changed in the interviewee's natural environment.

In the context of the customer survey, some disruption to the normal work flow can be seen in the fact that customers were asked via telephone to take about 15 minutes time to answer the questionnaire. Yet, the researcher's interference in the routine functioning of the work system is rather minimal as compared to that caused during causal studies. In causal studies, the researcher's interference with the natural setting usually varies from a medium to an excessive extent (Sekaran 2003). With manipulating certain variables and tightly controlling certain others, researcher interference can be regarded as medium if that is still done within the scope of the real organization or as excessive if it is done in a laboratory. Since the customer survey was done via telephone and customers were asked if they would prefer to be called back at another date or moment, no changes were inflicted on the customer's normal workflow situation.

As illustrated, the study setting as well as the extent of researcher interference depends on whether the study is causal or correlational. With the exception of market research studies, for instance, the majority of organizational research does not justify approaches of causal and thus experimental types. In order to solve a practice-motivated problem, research favours the traditional way of conducting a correlational study because disruption in normal business processes is difficult to substantiate and is likely to cause high costs.

6.6 Unit of analysis

In order to collect data, it is important to define the research object, i.e. the unit of analysis. It "refers to the level of aggregation of the data collected during the subsequent data analysis stage" (Sekaran 2003, p. 132) and is determined by the research question of the study. Since the unit of analysis is mostly embedded in higher levels that form part of the research study, it is sensible to speak of 'level' instead of 'units of analysis'. Thus, several levels of analysis need to be taken into account so that the research question can be answered appropriately. The core research object of this thesis is the customer process in a service transaction. Nevertheless, higher levels of analysis need to be integrated, as well, to solve the research issue in a comprehensive way.

Starting from the lowest level which is subsumed within higher ones, three different levels form part of the research analysis: First, the customer as an individual. The customer co-performs service activities within the transaction process and therefore defines the customer process, developing a service script. Second, the experts within the company who represent the link between the customer and the company by realizing the service transaction process. And lastly, the third and therefore highest level of analysis is represented by the service company as the institutional framework that pre-determines the service process and therewith pre-sets and directly influences the customer process. The method of triangulation (section 6.9) allows for all levels of analysis in an adequate way.

The customer process in theory has been discussed thoroughly within the preceding part of the thesis; it will also be resumed later on when describing the single activities in the service transaction being considered (chapter 7) as well as in the context of the data collection (section 6.9). The same applies to the experts as the middle level of analysis; their position within the company and the respective will be taken up again in sections 6.9 and 6.10 in the context of data collection as well as operationalization. The company as the unit of analysis of the highest level embraces both of the other units, i.e. the customer as well as the internal employees, and sets up the structure. Therefore, this chapter will then outline the type of service company as the outer shell or the super-ordinate level of analysis.

The service company being host to the research was the Security Management Center CSC Security in Stuttgart belonging to Network Projects & Services which is a subdivision of T-Systems International (TSI) corporation in the German Telekom conglomerate. Throughout

TSI similar service concepts are offered like LAN, WAN etc. under various sub-divisional company names. Even though the implemented service products vary and include different benefits for the client companies, the service process procedures are quite similar in terms of interaction and collaboration with the customers. This is why, all processes, modelled in ARIS[81], are subject to central process management and process design procedures throughout TSI. As a business-to-business supplier, the CSC Security provides other businesses and organizations with service products like firewalls, viruswalls and other kinds of security management systems including the appropriate service care packages. Four teams divide the company, which occupies around 50 employees, into the following sections: provision, customer support management and two customer system support teams. Each team has a team manager who is subordinate to the head of the CSC Security.

The company offers a 24-hour-service, 365 days of the year. To clarify what the offered service is about, the CSC Security deals with the implementation and supervision of other companies' firewalls and viruswalls. If a company experiences problems in their viruswall/firewall protection or wants to order changes concerning the service product, they contact the service provider to have the technical fault resolved or the changes carried out. The company's range of activity covers nationally around 200 customers of managed firewall solutions, 400 customers with modular appliance-solutions like Watchguard as well as 200 non-managed customers (see appendix 1). Their spectrum of manufacturers that their service products are based on regarding the installed hardware is rather wide. The CSC Security's core business comprises conception, realization and active management of all IT-components between LAN and WAN, i.e. the customer network and the internet.

The provision team is responsible for the 'plan' and the 'build' phase of the service; it is able to cover all processes from acquisition via technical consulting, evaluation, planning and projecting to putting the service into operation. The provision team is contacted for all security problems, consulting and sales support, but also implementation of security solutions as well as change and fault management for customers during the implementation phase. The 'run' phase represents maintenance and the pro-active operation of firewall management, i.e. securing a well-functioning communication infrastructure with the key processes of performance management, fault management and change management. Here, the customer

[81] ARIS = Architektur integrierter Informationssysteme. ARIS is a process modelling tool. Its platform of Business Process Excellence offers an integrated and complete tool portfolio for strategy, design, implementation, and controlling of business processes (Scheer (1994), Grieble, Klein et al. (2002).

service management team is in charge of pro-active event supervision, customer care for fault and change management, and performance supervision as well as internal work flow controlling and CERT coordination of occurring safety gaps. Finally, the customer system support teams in the 'run' phase are responsible for complex security changes and fault management. They offer second and third level support even for other customer support centers and security consulting for the extension of existing security packages. Also, the customer system support takes care of pro-active CERT activities. In terms of customer contact and interaction with the customer, it is the latter team that is concerned the most. Whereas the plan and build phase are only transitional and cannot cover more than several months, the 'run' phase is the actual core of the business relationship. Customer contacts are therefore much more intense and long-term with the customer service management but most of all with the customer system support because they face the majority of all inquiries and are always the first contact the customer deals with. As the explanations show, the service process being considered requires intense coordination among the main actors. It concerns a business process area that is highly sensible regarding the synchronization of the activities of service provider and customer as the two service parties which, in turn, entails an increased level of latent transaction costs.

6.7 Ethical issues

Conducting empirical research requires an appropriate behaviour with regard to the rights of the research objects, meaning those who become affected by the research work. That appropriateness of any researcher's behaviour is affected by certain underlying large-scale social norms[82] of behaviour (Zikmund 2000). Thus, research ethics are "ethics in terms of a code of behaviour appropriate to academics and the conduct of research" (Wells 1994, p. 284).

Ethical issues may concern four key fields with regard to the research process (Wells 1994; Zikmund 2000): The first field can be considered as the most dominant one because it relates to a range of basic ethical topics that generally affect the research process across all stages. For the most part, those fundamental ethical issues reflect essential social norms of interaction. Therefore in fact, the other three fields of ethical issues merely form subsections and go more into detail with the effects on the single stages of the study process. One

[82] A social norm indicates the type of behaviour that a person ought to adopt in a particular situation Saunder, Lewis, et al. (2003).

subsection relates to the design stage and the planning of the study conduct. After that, there are ethical issues which are directed to the stage of the data collection itself, especially discussing the consequences of different methods. And the last subsection deals with ethical issues that are prominent during the analysis and reporting stages. As research objects in this case, individuals as well as entire companies are concerned: First, ethical issues affect the contact persons of the respective customer companies from the customer survey and the experts with whom expert interviews as well as one round-table focus group were held. Second, the service-providing company under consideration, CSC Security in Stuttgart, as well as the customer companies who were contacted for the survey are affected by ethical issues.

As stated earlier, there are key ethical issues that affect the research process in general and they are just more prevalent in one stage or the other. Therefore, this chapter will focus on those essential key topics (Saunders, Lewis et al. 2003; Sekaran 2003) that need to be taken into account when conducting empirical research:

- Voluntary participation and the right to withdraw from participation at any stage of the process: Throughout the research process, all potential and actual participants were given the right to refuse or withdraw from any involvement in the study. The candidate customers in the survey were offered the chance to either reject the participation at all, being called back at another date or time of the day or stop answering further questions at any point during the telephone survey. The same applies to the expert interviews within the company. All interviews as well as the round-table focus group took place on a voluntary basis. As far as the companies as units are concerned, the entire research study was carried out in cooperation with the CSC Security; thus, all steps at all times of the research stages were taken after prior consultation with the company. With regard to the customer companies, they generally agree to take part in customer surveys on a regular basis. In this case, the contact person that participated in the customer survey and answered the questions was acting on behalf of the respective company.
- Participants' approval and permission without attempted deception: Although it is not required to acquaint participants with the actual reasons for the study due to possible bias responses, candidates should be informed that a study is taking place at all. When contacting the customer companies the researcher first told them the reason of the call in a broader sense, i.e. that there is a survey being done in order to improve the service

process and customer satisfaction. Referring to the expert interviews, the matter stands differently: Before the interviews within the company were done, all candidates were enlightened about the detailed contents and the background of the study.

- Confidentiality of data provided by individuals or participants and their anonymity: The researcher reassured all individual participants that the names of the customer companies were not published or mentioned at any stage and their answers would not impair further business transactions or company relations. All questionnaires in the survey were given codified numbers so that anonymity was guaranteed. With regard to the interviews within the company, the experts were given notice that their answers are analyzed and their names might be mentioned in the context of the thesis. Therefore, they were aware that their answers and their identity may possibly be divulged. Inversely, both sides, i.e. the researcher and the company under discussion signed an obligation to maintain secrecy and trustworthiness for all matters within the company and within the research of the thesis that could cause damage to either side.
- Participants' reactions to the way of data collection: Participants' reactions to the way of data collection were respected at all times of the study. That also implied that if the research or single features were criticized resulting in a candidate's withdrawal from participation, the researcher did not try to persuade the candidate otherwise.
- Effects of data use, analysis and report on participants: All data within the use of the thesis does not impair the participants as individuals who were taking part in the study. Effects only relate to improvements in the service process procedure and the introduction of company-wide novelties. Data usage does by no means harm or embarrass individuals.
- Behaviour and objectivity of the researcher: The researcher endeavoured to treat all candidates and actual participants in a friendly and polite way. Besides, the researcher made an effort to respect all company rules as well as the general company culture and behave accordingly. By taking all ethical issues into account as much as possible, the researcher tried hard to make all participants comfortable during the interviews and attempted to remain objective throughout the study.
- Privacy of potential and actual participants: Listed at the very last of the main ethical issues, privacy can be considered as the keystone of all the above because many ethical issues derive from keeping the right of privacy. For example, consent, confidentiality and participant reactions as well as the effects of data use, analysis and report are linked to the privacy of the participants. The right of privacy includes the

right not to participate or not to answer certain questions, to determine when someone will participate and not to be contacted at all times or at home where the sphere of privacy is even more delicate. Privacy also relates to the fact that the researcher does not harass the candidate or offers additional incentives to receive more than that given voluntarily. Furthermore, privacy embraces the right not to be subject to any attempt to prolong the duration of an interview or extend the scope of interview topics without first seeking permission of the candidate. Also, all candidates may not be subjected to questions or research situations creating stress or discomfort. They have to be assured about the anonymity and confidentiality of the research at all times. Include

Within the context of this thesis, the author's attention was drawn to the commitment to all ethical issues explained above. Privacy, since it comprises and affects all research stages and all other sections of research ethics, was hereby given particular consideration.

6.8 Sampling design

"Sampling is the process of selecting a sufficient number of elements from the population" (Sekaran 2003, p. 266). This way, a study of the sample and an understanding of its characteristics facilitates the generalization of such characteristics to the population elements. The population defines the full set of cases from which a sample is drawn. Sampling techniques endow the researcher with a scope of methods that help to reduce the amount of data which has to be collected. Instead of focusing on all possible cases[83] or elements[84], only a subgroup of elements is considered. Reasons for sampling can be budget or time restrictions or simply the impracticability for the researcher to inspect the entire population. Mostly, it also brings about a higher accuracy and the chance to collect more detailed information than a census facilitates (Henry 1990).

In this thesis, both major sampling techniques probability and non-probability sampling were applied. The former one was used in the context of the customer survey, whereas the latter one was used for the expert interviews. Probability or representative sampling grants that the chance of being selected from the population is known and nearly equal for all cases;

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83 Ibid.: A case is an „individual element or group member within a sample or population such as an employee" or an "individual unit for which data have been collected" (Saunders 2003, p. 473).

84 Collecting and analyzing data from all possible cases or group members in a population is called a census.

therefore, this technique enables the researcher to make generalizations for the rest of the population and answer research questions which require statistic estimations. In contrast, non-probability or judgemental sampling does not entail statistical inferences concerning the entire population; instead of generalizations the central goal here is to acquire different kinds of information (Barnett 1991). Each of the two main techniques comprises different sampling strategies which will be dealt with in the following.

The sampling frame[85] for the survey was made available through the suitable customer data base of the CSC Security. Since this data base is constantly up-dated, the listed cases were current and complete as well as precise. In total, the company has about 800 customers; yet, since 200 of those are non-managed[86], the relevant research aspects of the study concerning the service process procedures and the course of service interaction do not apply to those customers. Therefore, the population of interest consists of approximately 600 service customers, ranging from small and medium to large scale enterprises of diverse industries. Based on a population size of 600 and a 95%-level of certainty[87] [88] the sample size is roughly 230 (Vaus de 2002). Thus, a sample of 230 customer companies was drawn as a sample[89]. As a sampling strategy, systematic sampling was selected, i.e. samples were selected at regular intervals from the sampling frame. All customer companies were given an exclusive number each, starting from zero. The calculation of the sampling fraction[90] resulted in 1/3, which means that every third case from the sampling frame of 600 was selected. Starting from the first case by using a random number, all subsequent cases were picked systematically by employing the sampling fraction to determine the regularity selection. From that sample, a total of 70 customers answered the questionnaire during the survey. In telephone surveys, one can usually assume a response rate of about 50%. Non-response can be related to response-refusal, ineligibility to respond, inability of the researcher to locate or to contact the

85 A complete list of all cases in the population from which the sample is drawn is understood as the sampling frame. This definition applies to any probability sample.

86 'Non-managed customers' imply that once the hardware product has been implemented, there is no service interaction in terms of system supervision or else.

87 The level of certainty refers to the study being representative for the characteristics of the population.

88 With 95% certainty, the margin of error is 5%. The margin of error signifies the precision of the estimates of the population, i.e. with a sample of 100, at least 95 of these samples would be certain to represent the characteristics of the population.

89 Some authors recommend the adjustment of the sample size to an estimated response rate, resulting in an "actual sample size". Yet, in the context of this thesis this method is rejected due to the argument that the response can always have a different outcome than expected in which case all size and rate numbers would have to be recalculated afterwards.

90 Sampling fraction = actual sample size/total population. Since calculations mostly result in a complicated fraction, it is acceptable to round the population down or/and increase the minimum sample size in order to succeed in a simpler sample fraction Henry (1990), Saunders, Lewis, et al. (2003). Thus, the minimum sample was downgraded to 200.

respondent (Lavrakas 1993; Willimack, Nichols et al. 2002). The total response rate in this study was 35%, the active response rate was 51%[91].

A non-probability sampling technique was used for the expert interviews within the company. The selected strategy was a purposive, or also called judgemental, sampling. This way, cases can be selected according to the researcher's own competence to judge. Cases can be selected that deliver enlightening information for answering the research questions and meeting the objectives of the study (Neuman 2000). The logic, on which the selection strategy for a purposive sample is based, depends on research questions and intent (Patton 2002). As a sub-strategy of purposive sampling, typical case sampling was applied in the expert interviews. The focus of this kind of sampling lies in the illustrative aspect. That means, it is used "as part of a research project to provide an illustrative profile using a representative case" (Saunders, Lewis et al. 2003, p. 175). It helps to portray a typicality of the subject matter but does not aim for being definite or final. Since the cases selected for the expert interviews were supposed to cover the entire field of the problem area, interviews were held with the following people: process designer, core process manager, team manager as well as customer contact employee. Thus, interviewees were selected due to necessity of the fields of expertise which related to the problem area of customer service processes.

6.9 Data collection method: Triangulation

The term 'triangulation' denotes the use of multiple data collection methods within one study; it suggests that various approaches and strategies are not isolated but can be combined and harmonized with each other[92]. In that sense, quantitative and qualitative methods as well as primary and secondary data may be mixed. The study can profit from this technique because different methods can be applied for different purposes. Whereas interviews, for example, can be useful for in-depth discussion aspects of the broad research field, surveys help to generalize and answer other aspects of the research questions. A further benefit of triangulation is that results of various collected data can be compared. Since every method incorporates strengths and weaknesses and results are always affected by the employed

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[91] Total response rate = total number of responses/total number in sample-ineligible; Active response rate = total number of responses/total number in sample-(ineligible+unreachable). Results were calculated with a given total number of responses of 70, total number in sample of 200 (as downgraded earlier), none eligible and 62 unreachable.

[92] Such a combination of methods is also known under an older term, to be precise "multiple operationalism" (Webb, Campbell, et al. (1966)).

method, triangulation can neutralize the 'method effect'(Saunders, Lewis et al. 2003). This can entail a higher goodness of measurement, as will be shown in section 6.11. The following figure (Figure 6-2) illustrates the use of multi-methods in this study:

Source: / Content:	Customer Survey	Company Interviews	Content Analysis
Customer Knowledge	√		√ (info'material; information supply like brochures for customers)
Process Design	√	√	√ (internal process procedure, customer activities & process alignment → service blueprint)
Customer Script	√	√	
Process Success	√	√	√ eTTS

Figure 6-2: Triangulation of data collection

6.9.1 Content analysis

"Content analysis is a research technique for making replicable and valid inferences from data to their context…its purpose is to provide knowledge, new insights, a representation of 'facts', and a practical guide to action. It is a tool." (Krippendorf 1980, p. 21). Based on the mode how the content as the object of analysis is considered, content analysis offers an idiosyncratic approach of analyzing data. The following cornerstones can be identified to make up the framework for content analysis (Krippendorf 1980; Weber 1990; Neuendorf 2002):

- Definition of the data to be analyzed and to be communicated to the researcher
- Explicit context of the data
- Aim of the content analysis
- Aim of the inferences
- (fore-)knowledge of the data analyst
- Validity

The 'population' from which the data was drawn in this study consisted of company documents such as brochures, booklets and tender submissions for customer companies as

well as internal work plans, procedural descriptions, manuals, documentation of reference customers and quality management reports. All material was put at the researcher's disposal, either on the company's own initiative or on the researcher request for a special file supply. The data in such documents was often described in their own syntax, using many terms that were typical for the respective company. Since the researcher in this case was confronted with a rather technical and information system related business, it was necessary to identify units, categories and variables that could be used for the study purpose.

While data are made available in a content analysis, their context is always created by the content analyst. Since the content itself rarely has logical limits, all surrounding conditions, i.e. preceding, coexisting as well as consequential, have to be taken into account in order to define the boundaries of the structural unit of analysis (Krippendorf 1980). In this case, the unit of analysis, as discussed earlier, was the service transaction process focusing the customer process. Given that the customer process cannot be considered as isolated, all aspects relating to the service provider's process that might affect customer activities had to be allowed for equally. Thus, even if the data itself concerned the customer process and how the customer develops a process script of the service, the context of the data referred to anything that might affect or be affected through it. In that sense, preceding conditions signify any information that is put to the customer's disposal. Those documents may influence the customer knowledge which has been identified as an influencing factor on the customer script. Equally, internal process descriptions like manuals needed to be looked at because they are part of the process design which had been assumed as another script-influencing variable. Speaking of coexisting conditions that determine the data being considered, those can be found, for instance, in quality parameters and quality management reports or indices. Finally, as far as the consequential context conditions are concerned, the researcher analyzed and evaluated the eTTS[93] data. That data represented indices for the process efficiency, i.e. the time needed to proceed each customer order.

Content analysis provides vicarious knowledge, i.e. information about things that have not been directly observed. Therefore, the target of the content analysis is placed in that part of the variable with context of available data (Neuendorf 2002). Since the content analysis was not carried out in the exploratory stage of the study, the target was already clearly defined, as

[93] eTTS: electronic Trouble Ticket System. Every time a customer has a problem or an inquiry, a trouble ticket is opened and the case is entered into the data system. The ticket is not closed until the problem or the inquiry is completely dealt with and solved.

the previous explanations have elucidated. First and foremost, information to illustrate and record the entire service transaction process should be analyzed; second, information with direct reference to the customer process in terms of customer activities and script development as well as process design features was to be evaluated.

Inferences in content analyzes have to be made from the data to particular aspects of their context. This way, stable factors in the system being considered can be identified and the data may be considered as representative for such systems in general. For that reason, it is crucial to set up a theoretical framework in advance, to be precise an analytical construct defining independent and dependent variables as well as their interrelations (Krippendorf 1980). Such theoretical framework, as depicted earlier, provided the basic structure for the content analysis. Process design criteria, for example, could only be filtered out of the data because its single dimensions were elaborated from literature beforehand. In turn, the data then helped to infer from single factors to the context of service structures in a more general way. Analyzing the eTTS data helped to define one type of process efficiency in service transactions, while the analysis of information material which was put at the customer's disposal facilitated statements about customer knowledge influence as well as process design. Likewise, the process design is particularly concerned in terms of recording and summarizing all activities of the service transaction in form of a special service process map, i.e. the service blueprint. From such a record of activities and exact flowchart model it is easy to infer knowledge regarding the structure of the entire process and especially of the customer process in a service transaction.

As in many other methods, the construction of the context within which inferences are made is also determined by the researcher's knowledge and interest. Therefore, it is essential that the researcher discerns the origin of the data and all assumptions referring to the data and their environment are disclosed (Weber 1990; Robson 2002). The source of the employed data was the same: All data was made available by the company itself. Yet, it was important to realize that different data was given by diverse departmental units of the company as this fact implied distinguishing varying purposes and intentions of the data supply. Documents originating from the sales department, for instance, may be interpreted differently from the very start than if the same documents are merely for internal use from the process management unit. At the same time, such differences demand that the researcher reveals the interest of the study from the very start.

At last, the validity of content analysis is regarded as a important aspect (Krippendorf 1980). Yet, since this point represents a criterion of goodness of measurement, it will be taken into consideration later on in a separate section (6.11.3). Allowing for all the relevant features that have been discussed so far, it can be summarized that content analysis offered a useful and valuable tool in the context of the triangulated data collection method the author has pursued.

6.9.2 Interviews

"An interview is a purposeful discussion between two or more people" (Kahn and Cannell 1957, p. 9) and should always comply with the research questions, the objectives and the purpose of the study being done. Here, interviewing was selected as an appropriate method, first because the questions were complex and open-ended, second because the order and the logic of questioning might have needed variation (Easterby-Smith, Thorpe et al. 2002). Within this thesis, the author conducted all interviews herself. For the main study, two types of interviews were carried out: three semi-structured expert interviews as well as one expert group interview in form of a round table discussion.

Yet, before the actual interviews in the host company were carried out, two quasi-test interviews with another service provider were done. Both of those were held in a service company providing facility management, one with the service center sales manager and the other one with the head of quality management. They followed the same theme like the main interviews at TSI and were to test the clarity of the questions as well as to indicate afterwards that similar structures can be found in various service environments in the business-to-business sector (see appendix 6).

6.9.2.1 Semi-structured interviews

As it is the case with semi-structured interviews, the researcher had a list of themes and questions to be covered. Those questions slightly varied in each interview due to the area of expertise and the exact responsibility of the respective respondent in relation to the research topic. Also, the order of questions diverged a little depending on the flow of the conversation. All data was taken down and entered electronically into notes simultaneously during the interview. Every interview lasted between 30 and 45 minutes. Whereas one interview was conducted face-to-face, the two others were done via telephone due to reasons of geographical distance and time constraints. The selected responses were a service process designer and a

core process manager, both within the holding company of TSI, with whom the interviews were conducted via telephone, and a team manager of the company unit under discussion with whom the interview was held face-to-face.

Since the theoretical framework portraying the different variables and their interrelations in an analytical construct had already been conceptualized, the interviews were more of an explanatory nature. At least to some extent, the researcher was trying to obtain similar information to that from the content analysis and the survey so that in the end, there would be a common basis to compare the outcomes from different sources and methods. The interview guideline was defined by four major topic areas which were derived from the literature as well as from the theories considered within the frame of this thesis. Those topics areas were as follows:

- the company's own internal processes,
- relevance and consideration of customer processes,
- modelling and depiction of customer processes, and
- taking customer processes into account in relation to process performance

(see appendix 3 for the original interview guideline).

In summary, the intention of the semi-structured expert interview was principally to answer the following questions:

- Does the company model processes for service performance in form of a conceptualized plan?
- Does such a plan focus on customer interaction points?
- What do customer processes signify for the company?
- Do service production and process modelling take customer processes into account? And in what way?
- Are customer processes being modelled or reproduced?
- How is information concerning the customer process obtained?
- Does the company try to influence the customer process? And if so, in what way?
- (How) Does the company try to enlighten the customer about the course of the service process?
- Does the customer have a precise expectation and clear process image of the service transaction process?

- Does the customer's specialist knowledge have a beneficial effect on the service process performance?
- Is the service process design customer-related?
- Where in the course of the process do problems occur and what can they be attributed to?

Since managers or people in higher job positions prefer being interviewed to completing questionnaires (e.g. Healey and Rawlinson 1993), the interviewer in this study also decided in favour of personal and telephone interviews. It was considered essential to establish personal contact which also attaches more importance to the position and the magnitude of the respective respondent. To avoid surprises and to ensure that respondents were not contacted in an unsuitable or stressed situation, the researcher contacted all interviewees to arrange fix dates and time for the interviews.

All interviews were conducted in the following manner: At the start of each interview, the candidate was thanked for taking the time and agreeing to the meeting in the first place as well as for offering access to the requested information. Even though an introduction to the research project had already been given to the participant when announcing the interview via e-mail, the length of time, the purpose of the research, and its progress to date were briefly outlined again. The right to confidentiality and anonymity was then again pointed out to the respondent; furthermore, the participant was reassured that none of the statements expressed during the interview would be used without the respondent's permission. It was also stressed that throughout the interview the respondent had the right to stop the interview or refuse to answer any of the questions. The participant was also elucidated about further actions during and after the study concerning the research outcome. Finally, the candidates were asked for their permission that the interviewer could take down notes electronically of everything voiced during the interview and it was offered that the participant could be given any written documentation if wished so. After taking a few minutes for those explanations in form of an introduction to the interview, the researcher started the actual questioning.

6.9.2.2 Group interview

An equivalent introduction as the one described only just has been used when doing the expert group interview. The group interview lasting about one and a half hours was conducted

in form of a round table discussion with five participants, including the interviewer. With the interview being rather unstructured, the candidates were mostly discussing points between themselves. Meanwhile the interviewer acted more as a moderator and merely interrupted to ask some questions in order to direct the discussion to some key aspects. Such included the course of the service transaction process, the consideration of customer processes and problems occurring in the course of the service process.

The selected candidates all derived from CSC Security and even though coming from different job levels[94], each of them could contribute to the discussion from a different perspective of expertise. One of the participants was the head of the company, one was his business management assistant, one was the team manager of the customer support management team, and one was a service staff member from even that team. At the same time, the service employee actively collaborates on the company's service quality control which involves customer satisfaction surveys on a regular basis. Since the atmosphere during the group interview was very relaxed and undisturbed, there was no need for the interviewer to take action against somebody dominating the discussion. All candidates behaved very fair and respectful towards each other. Also, each of the participants took an interest in the research itself so that they could be considered as promoters of the study. Another reason for gathering the expert group together was the discussion of the questionnaire as a quasi-pilot-testing. This point will be explained in more detail later on (section 6.11.3).

6.9.3 Survey

The survey was administered by telephone[95] based on a standardized questionnaire[96]. Its purpose was to collect responses from a relatively large[97] sample providing the basis for a quantitative analysis which was to be used to test the hypothesized interrelations among the

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94 Some authors warn against employing a "vertical slice" in group interviews (e.g. Saunders, Lewis, et al. (2003)) because the interviewer runs the risk of inhibiting possible discussion contributions due to differences in status and work experience. Even though conceding that such may possibly cause lack of trust and restraint expression of opinions within the group, the author confirms that there were absolutely no such phenomena taking place within this group.

95 The survey was done with customer companies. All of which were listed in the customer database system of the company hosting the research. The population could therefore be considered as suitable in the sense that all population members could be telephoned and selected by name, organisation etc.

96 The term questionnaire implies several meanings. In this thesis, the term will be used to denote a technique of data collection in which each person is asked to respond to the same set of questions in a predetermined order (De Vaus (2002)).

97 Since the study was conducted in a business-to-business sector, a "large" sample size usually refers to somewhat different numbers as it would be the case with consumers; for that reason, 70 can be considered as a *relatively large* sample.

variables of the theoretical framework. The target group of the survey were customers[98] [99] of the CSC Security (some aspects of the survey were already covered when discussing "Sampling": see thereto section 6.8), to be precise nation-wide business companies as well as public organizations and institutions of different industries and sizes. One of the employees of the IT network administration department of the respective customer company who was appointed as the contact person in charge was questioned as vicarious for the business company itself. In many cases, the respondents had the status of IT managers or network administrators.

The author conducted the majority of the survey herself: 63 out of 70 customer companies were questioned by the author, whereas seven customers were interviewed by a trainee of the company who was to assist the author during the survey. The trainee supported the author mainly in the sense that she contacted many customer companies to arrange a date and time which suited the contact person best to be called back and interviewed by the author. In cases with no reply, the customer was tried to be reached several times, each at different times and on different days, too. All calls with date, time, person spoken to and call back options were entered into an excel-chart; it was also recorded if the questionnaire was completed, if a fix date had been set up for a call back or if the customer reacted annoyed and expressed unwillingness to participate in surveys in general. Since the CSC Security usually conducts telephone surveys throughout the year as part of their quality control program in order to gauge their customers' satisfaction, no special advance notice was given to the customers for this particular kind of survey. All contact data was could be gathered from the customer data base to which the researcher was given access throughout the study. In the database, the name of the customer company, all eligible contact persons in charge of the service procedure as well as the respective passwords could be found. Since the CSC Security is a highly sensitive service environment in terms of data security administration, passwords are required on both sides to secure identification when contacting each other.

As an introduction, the author introduced herself in the name of the CSC Security and explained the purpose of the study. It was made clear that the study was conducted as part of the company's quality control program in order to improve the service process and to ensure customer satisfaction. Next, it was pointed out that the questioning would take no more than

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98 Throughout the thesis, the term customer will refer to either of the following: the customer company as well as the contact person being interviewed who is acting vicariously on behalf of the company.

99 It concerns customers of the service products Watchpack and Checkpoint: see thereto also appendix 1.

15 minutes before the customer was asked for time and willingness to answer the questionnaire. The author informed the respondent that responses to any questions could be refused and the interviewing process could be stopped at any time. Also, the candidate was notified about the right to interrupt at any time to ask questions. Additional comments and suggestions for improvement would be appreciated if the customer wished to remark any. Then, the customer was reassured about absolute anonymity and confidentiality with regard to the data in the survey. The fully standardized design of the questionnaire as an excel-sheet enabled the author to enter all responses directly during the survey by marking the respective boxes. All further comments expressed by the customer were taken down and entered in those boxes of the questionnaire which were especially provided for. After concluding the questionnaire, the customer was thanked for time and effort taken and the questioning was finished off in a polite way.

All questionnaires were divided into four sections covering the following topic areas which correspond to the concepts described in the model framework (section 5.3):

- Customer knowledge
- Process design
- Customer script
- Customer satisfaction

The operationalization and the exact wording of the questions will be explained in more detail in the following section.

6.10 Measurement and operationalization of variables

This section deals with the operationalization of the constructs from the model framework. The operational definition which the thesis pursues is based on the following scheme (Sekaran 2003): The model framework consists of four constructs which can be regarded as higher-level variables. Each of these constructs is characterized by different dimensions. Then, each dimension can be translated into measurable elements, indicators or items which correspond to the itemized questions in the questionnaire.

The questionnaire was divided into four parts which complied with the four major concepts of the model. Apart from the very last question which was asking the customers explicitly for any suggestions for improvement, matters of interests or additional comments they might

have, all questions were closed[100]. That means, the respondent was asked to choose among a set of alternatives given by the interviewer. In general, closed questions make it easier for the candidate to meet quick decisions and at the same time, they facilitate the coding of the questionnaire information for subsequent analysis (Youngman 1986). Therefore, it was important that all alternatives in the questionnaire were mutually exclusive without any overlapping categories so that respondents did not get confused. As far as language and wording of the questionnaire were concerned, it was paid attention that all questions were suitable for the target group of respondents. Positively and negatively phrased questions were avoided (Fink 1995). Equally, the author paid attention that no double-barrelled[101] and no ambiguous[102] questions were used. Also, leading questions[103], loaded questions[104] as well as questions implying social desirability[105] were refrained from.

The majority of the questions used a five-point rating scale[106], i.e. an interval scale which was based on the school marking system with one being 'excellent', two as 'good', three as 'satisfactory', four as 'fair' and five being 'unsatisfactory'/'poor'. At the beginning of each interview the candidates were explained that most of the questions would be using that kind of scale unless indicated otherwise through the interviewer. It was also pointed out to the respondents that one defined as "excellent" in the first place could also generally be interpreted as "very good", "very high" or "very much", depending on the phrasing of the respective question.

Thus, in the following the operationalization of the single constructs will be elucidated including their scale measurement and the exact item as the respective question used in the questionnaire (for the original questionnaire: see appendix 4). Some scales were transformed in the further course of the analysis in order to simplify and summarize particular categories; yet, such will be ignored in this context but will be taken up again in chapter 7.

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100 All questionnaire items that are based on a nominal, ordinal, Likert, or ratio scale are defined as closed questions.

101 A double-barrelled question combines two questions in one so that the subparts of the question would actually require different possible responses (Fink (1995))

102 Ambiguous questions are ambiguously worded and do not exactly refer to one specific possibility to answer the question. That sort of questions often imply built-in bias because much of the response depends on the respondent's interpretation (Foddy (1994)).

103 Leading questions are phrased in a suggestive manner so that they lead to those kind of responses the interviewer wants to be given (De VAus (2002)).

104 Loaded questions are worded in an emotionally loaded manner so that they provoke bias in the responses (Fink (1995)).

105 Questions implying social desirability are couched in a way so that they elicit socially desirable responses (Sekaran (2003)).

106 With the majority of questions using the same type of scale, the questionnaire as the measurement instrument qualifies as consistent (De Vaus (2002)).

6.10.1 Customer knowledge

The construct of customer knowledge has been discussed thoroughly in 4.3.2. It consists of the two dimensions "knowledge" and "experience". Whereas the former implies the customer's knowledge level of information, the latter implies the customer expertise. The construct of customer knowledge was translated into the four following items in the questionnaire:

- Informing oneself: This item expresses the customers' endeavour to inform themselves about the service product and tries to measure the customer's knowledge interest. It is based on the assumption that building up knowledge also depends on a person's interest and tendency to acquire it. The operationalized question that the customers were asked is as follows: "How thoroughly have you read and inspected the information material about your purchased service package, e.g. terms and conditions of trade or detail concept?" This question was based on a rating scale and could be answered using the school marking system from mark one to five.
- Being informed: Here, the respondent is called upon to assess the degree of being informed about the purchased service through the service provider's side. Since personal conversations take place between the customer and the service provider, the customer can learn about the service details from the conversation. The candidate was asked the question "How detailed have you been informed beforehand about the course of the process when dealing with technical faults?" This question was using the same interval scale as the preceding question.
- Level of experience with similar services: The use of this item follows Gan's approach (Gan 19XX) who also employed dimensions like knowledge and information in the context of consumer scripts for online transactions. According to him, not only knowledge referring to a particular kind of service product but also knowledge relating to similar kind of service products might be of relevance. Including knowledge about similar service products takes the assumption into account that individuals are able to transfer knowledge and apply it in a new or modified situation as discussed earlier (section 4.3.2 and 5.3). Thus, the question was worded as follows: "How much experience do you have with service process procedures of similar service products?" As before, the question was using the same interval scale again.
- Degree of expertise: The degree of expertise was related to the respondent's expertise and job position within the customer company. In the customer database, the

respective contact persons were attributed different ranges of access and responsibility with regard to the service. Depending on the candidate's position and range of responsibilities, three different categories were classified. Someone with all access options and the full range of responsibilities was classified in rank one, e.g. this person was allowed to order changes and to report technical faults. From the client's side, persons in rank one were in charge of the overall service product and were mostly called IT administrator or manager. The second rank included persons who had the right to report technical faults and order minor changes under special conditions; they were mainly named IT support member. Candidates belonging to the third rank were merely allowed to report technical faults and in most cases, they appeared without job title in the database. Therefore, this item could be obtained directly from the database entries, once the contact person was identified.

6.10.2 Process design

Based on the theoretical explanations in section 4.6 the construct of process design comprises five key dimensions, namely learnability including feed-back, consistency including feed-forward, visibility including correspondence, robustness including usability, and controllability. According to those dimensions the concept of process design was translated into the 12 following items in the questionnaire:

- Option of intervention: This item was to operationalize the element of controllability. In order to feel in control over a situation, the customer needs the possibility to intervene in the process actions at any time. The question was therefore intending to measure the customer's assessment and perception of the control the process is offering. The question read as "To what extent does the service process, i.e. your contact person or the system per se, offer you the option of taking up at any time and intervening in the course of action, e.g. cancel certain process steps, making changes concerning given information, questions being answered?" The question was based on a rating scale and could be answered using the school marking system from mark one to five.
- Feed-back: Since feed-back represents an essential aspect for learning a process sequence, this item expressed if the service process offered constant feed-back to the customer throughout the process. The question was worded: "After every process step,

how much feed-back do you receive from our company's contact employee or from the system so that you know your information given and your steps taken were correct?" As before, the question could be answered based on the same interval scale as before.

- Feed-forward: As an important feature of process consistency, this question tried to operationalize forward guidance of the process actions. The question the customer was asked was "While ordering to what extent have you been informed about the further course of handling the offer?" This question, too, was using a five-point rating scale.
- Process consistency: Consistency, in a transferred sense, also supports the learnability of a process which gives it twofold significance. In that question, the customer was asked straight away for an assessment of the process conclusiveness and consistency. The question read "To what extent does the service process appear to you as conclusive and consistent?" Again, this question was based on the same rating scale as the preceding questions.
- Process logic: As a form of the visibility and correspondence of the process, this question was expecting the customer to judge if the service process and the process sequences seem to be logical. For that purpose, the following question, using a five-point interval scale as before, was couched "To what extent would you assess the individual actions of the service process as logical suited to one another?"
- Contradictions: To test the consistency of the service process the customer was requested to state if the process showed any kind of contradictions or indistinctness causing unsteadiness. The item in the questionnaire was phrased as follows: "In your opinion, are there any contradictions or indistinctness within the service process causing uncertainties for you (e.g. how to proceed further on or what is supposed to happen as a next step?)". Unlike the preceding questions, this one was based on a nominal scale. The posed category question gave two mutually exclusive response alternatives, to be precise "yes" and "no".
- Unexpected deviations: This item was set up to have the customer assess the universal robustness of the service process. The reliability of the process results in the client's belief of security. Therefore, the question was couched "In your opinion, to what extent does the service process withstand unexpected deviations?" The response alternatives were interval-scaled, using a five-point rating scale.
- Process flexibility: In this item, flexibility should be tested with reference to the robustness of the service process. It was to find out if the customer perceives the

service process as flexible, yet robust enough to react to sudden changes without any loss of quality. The question was worded in the following way: "To what extent is the course of the service process sufficiently flexible so that it is capable of reacting to sudden changes without the service quality being impaired?" The question could be answered on the same interval scale as the preceding question.

- Transparency: As a crucial aspect of visibility, this item was to make known the candidate's judgement of the transparency of the process. Transparency offers observable and retraceable process features to the customer. In this context, the following question was asked "To what extent do you consider the service process as transparent?" It was based on a five-point rating scale.
- Following the course of the process: In order to test the customer's judgement on the learnability of the process, it was directly asked for the easiness to follow the process. The question was simply phrased "How easy do you find it to follow the course of the process?" and was using the same interval scale as before.
- Process comprehension: To ensure that the customer can participate in the service process, the process needs the feature of usability. It is essential that customers are capable of 'using' the service process given that they co-produce the service and deliver information and perform several process actions. In this context, the following question was asked "If technical faults are reported, you are possibly expected to perform certain actions and give us the appropriate information so that we can clear the technical fault. How easy is it for you to comprehend this process procedure and collaborate with us accordingly?" The candidates were given five response alternatives on an interval scale.
- Influential control: The last item of this part of the questionnaire was concerned with the dimension of control. For that purpose, the customer was confronted with the following question "Concerning the individual process steps that have to performed - to what extent do they offer you the option of control and influence?" This item, too, was based on the same rating scale as the previous questions.

6.10.3 Customer script

Section 4.4 had aimed at clarifying the construct of customer scripts in depth. It consists of the three dimensions "script intensity", "script complexity" and "number of scripts". Whereas the first one implies the degree to which the customers' actions are determined by their script,

the following one implies intricacy and density of the script in terms of decision and branch points and required contribution to the process situation. The number of scripts, at last, is simply self-explanatory because it refers to the quantity of scripts that the customer perceives within the service situation. Script intensity, as the first dimension, represents the most essential one because it directly concerns the power of the customer script. The construct of the customer script was translated into the following five items in the questionnaire:

- Process image: This question was asked as an overall-question to obtain a more general impression of the existence of a customer's script. Here, the respondent was to assess if he/she is clued up about the service course of events. The questionnaire item was worded as "How precise is your process image of the action sequence for processing the service order?" and was based on a five-point rating scale.
- Input contribution: This item relates to the dimension of script intensity and wants the candidates to gauge their knowledge about the necessity of their own input contribution during the service process. The relevant question read as follows: "To what extent do you know where and at what point during the service process your input is required, e.g. communicating information, re-booting a machine?" This question, as well, used a five-point interval scale.
- Automation: Considering the dimension of script intensity as the most powerful one, it was granted a second question. Here, the automation of performing activities during the service process was to be measured. The following question was asked: "To what extent are the steps you are performing during the service process automated?" As before, it was measured on the basis of a five-point rating scale.
- Decision points: This question was posed in order to gauge script complexity. The candidates were supposed to judge the complexity of the service process in terms of branch points and action alternatives from their perspective. The question was couched as "Are there many points within the service process for you to choose between various action alternatives, e.g. are there many decisions to make?" Based on a five-point interval scale, one was indicating very high, meaning that there were many branch points whereas five was suggesting a low extent of action alternatives.
- Process construction: The last question within this part of the questionnaire was referring to the third script dimension, i.e. the number of scripts. Here, the candidates were to state if they perceive the service process as one process entity or as a line-up of stringed process sections. For that purpose, the following question was phrased: "When you think of the construction of the service process, would you then define it

as one process entity or rather as a series of smaller process sections that are stringed together?" This item was based on a nominal scale so that the respondent had two categories to choose from, precisely "process entity" and "several smaller process sections".

6.10.4 Process success

The concept of process success was thought of as combining process efficiency and process effectiveness, which was why it comprised two different dimensions. Whereas the former one could directly be generated from transaction cost theory, the latter one was additionally included for the benefit of a complete service management objective. The one defined as process efficiency related to the time needed to process a customer order. This dimension was only obtained from the respondents in so far as their satisfaction with efficiency and time needed was asked within the questionnaire. Other than that, process efficiency was – first and last – evaluated in the context of the content analysis. By way of the company's eTTS database system, time efficiency for each customer order could be analyzed. Thus, there was no need for further operationalization of the variable within the questionnaire.

Within this subsection, the focus will therefore be set on the second dimension only, classified as customer satisfaction. Unlike the order processing time which was used to quantify process efficiency, customer satisfaction was invoked as one possible measurement of service effectiveness (e.g.Ivens 2006). Given that customer satisfaction can be considered as a service outcome, it offered a suitable dimension for the operationalization of process success, to be precise for process effectiveness.

The operationalization of customer satisfaction was following the conception of SERVQUAL (Parasuraman, Zeithaml et al. 1988), manifesting five major aspects of quality, namely tangibility, empathy, responsiveness and reliability as well as assurance. Based on the assumption that those aspects have to be allowed for in order to achieve overall customer satisfaction, the operationalization lead to the following items in the questionnaire:

- Performance quality: This item was referring to the reliability and the quality of the outcome in general. The candidate was to judge the performance quality when making order changes. The matter was phrased in the questionnaire as follows: "How satisfied

are you with the quality of carrying out your order requests for changes?" The item was based on a five-point rating scale.

- Time of order processing: In the context of the customer survey, this was the only question that referred to the client's assessment of the service provider's time of reaction when processing customer orders. Therefore, it was to evaluate the provider's. The question was worded as "How satisfied are you with the time we require to deal with your instructed order until it is implemented?" The candidate could answer the question by using a five-point interval scale.
- Technical competence: Here, the respondent was asked to rate the service provider's competence when processing the order. On the one hand, this question was referring to the quality aspect of reliability, considering the contact person whom the customer deals with as vicarious member for the service company as a whole. On the other hand, when considering the contact person as an individual, the question was aiming at evaluating the quality aspect of empathy. The item in the questionnaire was read "How would you assess the technical competence of our company's contact employees?" To answer the question, the candidate could use the same five-point rating scale as before.
- Friendliness: For obtaining the customer's perception of the service provider's empathy in terms of comportment during the service process, the candidate was to rate the contact person's pleasantness. The question was simply posed as "How do you assess the friendliness of our company's contact employees?" As in the preceding questions, the same interval scale was used again.
- Status notification: This item was reflecting the quality aspect of assurance. The candidate was requested to gauge the feature of status notifications while the order is being processed. This feature is important because it allows for the customer's assurance that the service is in operation and that customer requests are dealt with as promised. The item in the questionnaire was phrased "How satisfied are you with being notified about the actual status of the order processing?" This question, too, was using a five-point rating scale.
- Meeting fixed dates: This question concerned the service provider's keeping to definite dates in terms of dealing with the order. Here, the quality aspect relates to the reliability of the service. The item in the questionnaire was couched as "When you order changes, how satisfied are you with us keeping to fixed dates to process the order?" and was based on a five-point interval scale, as well.

- Quality of consulting: Referring to the feature of responsiveness, the item was asking for an assessment of the service provider's consulting activities for order changes. For this purpose, the candidate was asked the following question "How would you assess the quality of our consulting activities when you order changes?" The item in the questionnaire used a five-point rating scale.
- End notifications: Once again taking up the quality feature of assurance, this item in the questionnaire was trying to obtain the respondent's satisfaction with receiving end notifications about completed order changes. Being notified that the service process has been concluded and the requested changes been made gives the customer an essential sign of reassurance. The question was couched as follows: "How satisfied are you with end notifications after a change order has been carried out and completed?" To answer this question, the customer could draw upon the same interval scale again, as earlier.
- (Report) information material[107]: This item was referring to the more tangible features of the service. Providing customers with (reporting) information material on a regular basis, offers them a tangible evidence and understanding of what the service actually performs. The questionnaire item was worded as "How satisfied are you with the quality of our web-based reports/information material?" and was using a five-point rating scale.
- Suggestions for improvement: The penultimate item was to find out any suggestions for improvement the customer could possibly have in mind. This question was not only set up to show the respondents that their opinion is taken seriously but also to gauge an overall satisfaction. Besides, it should also identify any aspects for optimizing the service process because customers often deliver important ideas or inspirations which can be implemented in the service process. The questionnaire item read "Do you have any suggestions for improving our service performance?" and was based on a nominal scale so that the respondent had two categories to choose from – "yes" and "no".
- Probability of recommendation: Like the preceding question, this last item in the questionnaire was to obtain an overall measurement of the candidate's satisfaction in general. Assuming that only someone who is completely content with a service product would also recommend it to fellow customers, the item was phrased as "To

[107] Depending on what SLA the customer were set on, they either received web-based reports on a regular basis or not. Thus, the question was phrased as referring directly to the web-based reports or otherwise to the general information documents all customers receive.

what extent would you recommend us – as a service provider for internet security services – to other companies?" Again, this very last question in the questionnaire was based on a five-point rating scale.

6.11 Goodness of measures

After the variables have been operationally defined and translated into different scales, this section is to ensure the credibility of the findings. That means measures have to be tested in terms of their goodness in order to certify appropriate research results. Data quality issues need to be applied to all types of data collection methods within the triangulation. The following criteria shall hereby be taken into consideration: objectivity[108], reliability, validity, and generalisability[109]. Also, aspects of reliability as well as validity will be referred to within the testing of the goodness of the data (chapter 7).

6.11.1 Objectivity

The criterion of objectivity refers to analysis results that are independent of the researcher. Such can only be guaranteed if the person conducting the study has as little influence as possible on the respondents (Berekoven, Eckert et al. 1999). The interpretation of the data analysis results must not be based on the subjective opinion of the researcher but should merely refer to the facts of the findings (Sekaran 2003). In order to minimize any chances of researcher influence, social relations between the researcher and the respondents have to be prevented (Robson 2002).

Concerning the content analysis, each step has to be carried out on the basis of explicit rules and procedures so that other analysts, following these rules, can arrive at similar conclusions (Krippendorf 1980). Most of the content analysis was aiming at identifying the key process features in order to record the process activities in form of a service blueprint which shows a rather objective procedure. In addition, analyzing the eTTS data to measure process efficiency was part of the content analysis. Since the data was available in accurate numbers attributed to each customer and the customer's respective service level, the analysis procedure is also quite easy to comprehend and to reproduce. Therefore, it can be said that the researcher's influence in terms of analyzing the content data within the company was rather low.

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108 Objectivity can also be labelled as (researcher) bias.

109 Sometimes, generalisability is also referred to as external validity.

The next step involves testing objectivity in the context of the qualitative interviews. This implies the avoidance of interviewer bias during the expert interviews and the expert group discussion. Several points are important when trying to overcome interviewer bias in interviews (Healey and Rawlinson 1994). Among them, the interviewer's knowledge and level of preparation needs to be mentioned. Before conducting the interviews, the interviewer here had extensively familiarized herself with the organisational context and the industry environment in which the interviews were taking place. Equally, the candidates had also been provided with relevant information about the key interview themes before the interviews were held. This way, the credibility in the view of the research participants could be increased. Another point was ensuring clearly phrased questions so that the respondents had no difficulties in understanding. Also, in those interviews that were held personally, the author avoided any kind of non-verbal behaviour such as gestures or facial expressions showing emotions; instead, a neutral yet interested behaviour was aimed at (Torrington 1991). Since all interviews were taken down simultaneously, it was ensured that the full interview record was complied right away controlling bias and reliability for the analysis (Ghauri and Gronhaug 2002).

The survey under discussion was conducted via telephone so that respondents were not affected by the researcher's appearance. Since all questions were read out straight from the questionnaire without any further comments, the researcher's personal goals and values were completely left out of account. Social interaction between the candidates and the interviewer was minimal which is why an attempt to influence respondents from the researcher's side can be considered as negligible. The objectivity in terms of analysis was mainly ensured by the fact that the standardisation of the questionnaire items was not offering much scope for alternative analyzes. In sum, it can therefore be recorded that within the survey objectivity in terms of data collection as well as data analysis can be considered as met.

6.11.2 Reliability

The criterion of objectivity can be regarded as a necessary condition for the reliability of measurements. Reliability defines the state that measures will yield the same results on other occasions as well as with different researchers. That means, reliability relates to a stable and consistent measurement instrument (Sekaran 2003).

The content analysis was based on rather definite criteria since the objective was to produce a service blueprint which gives a stable framework of what must be considered and included and what does not. Therefore, it can be assumed that the analysis would be easy to reproduce. As far as the interviews are concerned, some authors (e.g. Marshall and Rossmann 1999) claim that non-standardised research is not necessarily intended to be repeatable. The reason given is that the purpose is to reflect reality at a certain point in time when the data is collected and the respective situation may be subject to change. This view is based on the assumption that the situation under consideration is complex and dynamic which can be seen as a strong point of qualitative research in general. However, the conducted interviews deliver sufficient records for other researchers to understand the applied process (Saunders, Lewis et al. 2003). Since an interview guideline was used and notes were simultaneously taken of all interviews, a full record was provided. Such makes it much easier for fellow researchers to reproduce similar research in a later stage.

Concerning the survey, the measurement conditions within each questioning as well as across the entire survey were kept steadily. With every respondent the data was collected via telephone, always in the same manner and from the same interviewer. All instructions regarding the survey were written down on the questionnaire in form of additional comments for the interviewer. This way, all respondents were given identical information.

6.11.3 Validity

Validity defines the condition that it is actually measured what that the study claims to examine. In the context of the content analysis, validity increases if the data context is embedded into established theories (Krippendorf 1980). Here, service blueprints representing the main objective of the content analysis can be regarded as an established theory on which the content analysis was based on. In contrast, validity in qualitative interviews reveals in the flexible and responsive interaction between interviewer and interviewee so that topics can be covered from different angles and meanings can be explored (Healey and Rawlinson 1994). Since the interview guideline for the expert interviews was semi-structured and was adapted depending on the area of expertise of the various respondents, it provided an appropriate level of flexibility through the interviews as well as the expert group discussion.

With regard to the survey and the questionnaire as the employed measurement instrument, a pre-test was conducted in order to increase the face validity[110] of the study. For this purpose, a chart with statements/items on one side and the concepts of the study on the other side was sent to 12 marketing experts, both academics and professionals. They were to mark the concepts which they thought would be expressed by the respective item. As a result, four out of 25 items were rephrased because their face validity achieved less than 75% (see appendix 5). In addition, the questionnaire was refined once again during the expert group discussion. The participants of the round table being intensely familiar with the research object and the target group of the survey advised to modify and even to replace distinct questions. This way, it was allowed for higher validity of the measurement instrument as well as for the high sensitivity among the customers in that particular service environment.

Concluding, it can also be said that applying triangulation as a method of data collection gives the study a high rank of construct validity. Using a combination of three different data collection methods enhances the results obtained in each individually. In the end, parts of the results can therefore be compared and brought together to achieve a comprehensive and extensive result of the data analysis.

6.11.4 Generalizability

The criterion of generalizability refers to the assumption that the research can be transferred to other business contexts and situations. Since the study was done in one particular service company, this condition is probably hardest to prove among the data quality issues. From a purely scientific and academic angle, the research being done as an exemplary case can not be assumed to withstand the test criterion of generalizability.

However, taking a more pragmatic perspective, there is presumably a chance for the study procedure as well as the research results to apply to other businesses. As far as the context analysis was concerned, a similar procedure could be applied to most service industries. Using manuals and company documents to record the process activities in form of a service blueprint is a modus operandi which is generally applicable because the service blueprint is a common tool to do so. To a certain degree, a similar procedure can also be claimed for the qualitative interviews. The interview guideline had been employed earlier in another service

[110] Face validity denotes a sub-term of content validity which "ensures that the measure includes an adequate and representative set of items that tap the concept" (Sekaran 2003, p. 206).

company for testing reasons (as described in section 6.9.2). Even though a completely different service sector was concerned, parallel patterns in the responses could be identified (see thereto chapter 7 for the analysis of the interview data). With regard to the survey, it has to be conceded that the questionnaire would have to be adjusted to different service contexts. However, the main topics that are covered in the questionnaire and which, at the same time, build up the framework of the theoretic model would be likely to be applied in other service companies of different industries, as well. Since the study involved quantitative analysis based on a relatively large sample, the survey results are assumed to be transferable to several service situations. Overall, the study process as well as the research results should at least be widely applicable to different service situations in a business-to-business context (see also section 8.1.2).

7 Data analysis and interpretation

This chapter is concerned with the analysis and the interpretation of the data collected. In that context, the distinct data collection methods described earlier serve different purposes: whereas the quantitative data of the survey is explicitly used to test the hypotheses, the data generated through content analysis and expert interviews supplies information to answer the research questions from a broader perspective and interpret the data in a more integrated and comprehensive manner.

In order to comprehend the customer process fully, it has to be presented in context. Hence, starting from a more general angle and then gradually becoming more specific, the chapter is structured as follows: at first, by recording a service blueprint, the content analysis provides an overview of the service transaction process seen as the overall process. In addition, company documents and information material are analyzed for direct clues to the major research questions (see section 5.2). Secondly, the individual expert interviews as well as the expert group interview try to grasp the service transaction process with the focus on the provider's process side. Thirdly and lastly, the survey data is used to reflect the service process from the customer's angle. Here, descriptive data results will be gained from the quantitative survey data before the distinct hypotheses are tested.

7.1 Results of the content analysis

In order to capture all process activities within the service transaction and record them in form of a service blueprint, company manuals, internal procedural guidelines and documented ARIS models were surveyed. Unlike ARIS modelinging, service blueprints put emphasis on the customer interface. They also focus on the integration of the customer given that it also affects the internal process activities within the service company. From that analysis, all process activities were identified and ordered chronologically before they were attributed to the different blueprint activity levels. This was done not only for the traditional service blueprint, i.e. the structuring of the internal process activities of the service provider, including the activities of interaction. It was also applied to the customer activities, resulting in a service blueprint that was extended by the dimension of the customer process side. Thus, it appeared as 'double-blueprint', that is, the original form of a service blueprint of the service provider's activities on the bottom, with a reverse reflection of the one involving the customer activities on top. The complete service blueprint provides a useful overview of the service

transaction process seen as the overall process and unites both the service provider's and the customer's process activities. A sample section is illustrated in the following figure (7-1):

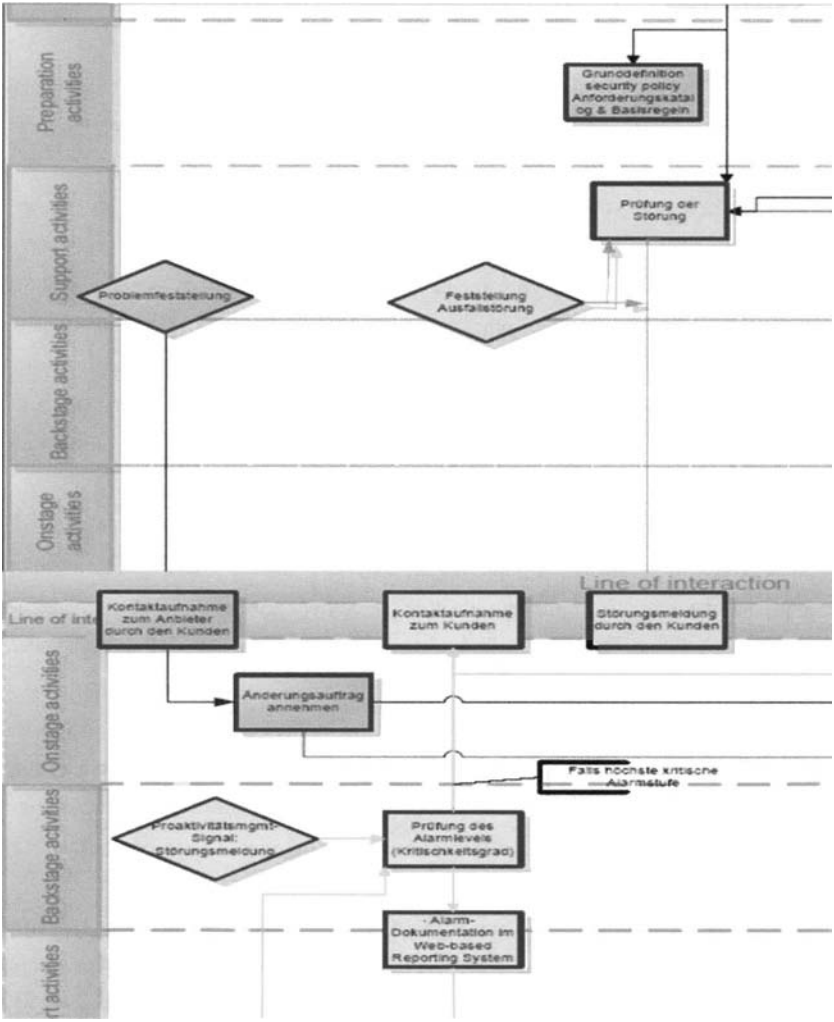

Figure 7-1: Extract from the complete service blueprint

In addition, company documents and information material were analyzed for direct clues to the major research questions. To be precise, a search was made for evidence of actual customer process activities, information records equipping the customer with process knowledge, and also clues to process design.

Embedding the existing process activities in a service blueprint predominantly highlights critical process activities (see Figure 7-1). Most of all, they can be found at the customer interface because the customer input produces a source of uncertainty for the provider. The following activities were identified as the most critical process points:

- Retrieving the password: the password retrieval has to be carried out in mutual agreement without one of the parties having to be specially instructed. For both parties, the password has to be at hand, otherwise time delays can occur. That means the customers need to be aware that the password exchange implies a high risk and that the password is equally required from both the service provider and the client. At the same time, such a situation can entail uncertainties if one party is not sure about the other party's identity at the other end of the line. Since the service is taking place in a highly sensitive environment in terms of security aspects, organizational hitches of that kind can result, at worst, in the loss of the business relationship. The customer selects the provider mainly based on criteria of trust. That trust has to prove itself particularly when dealing with security codes like passwords.
- "Problem interview": after the first password retrieval a problem interview is being done. Here, the customer is requested to deliver certain information, e.g. machine type, software status. If that information is faulty or incomplete, it can lead to inefficiencies concerning time delays in processing the service as well as dissatisfied customers.
- "Re-booting the machine" (exchanging the pre-defined component): this activity refers to a "real" customer activity, that is, it is taking place backstage at the customer company and, hence, it is out of the provider's reach. Here, the slightest mistake from the customer can result in process disruptions which may entail a process re-start or at least a partial re-start.
- Final system check and customer notification: this critical process activity partly results from the process portrayal of the service blueprint but it is supported by results from the customer survey. At present, it is not a standard rule to perform a final check-up of the complete system followed by a notification of the customer as an assurance that everything is approved. Here also, the trust of the customer is an essential issue. The trust-based relationship would be considerably reinforced through such a step because the customer would be able to perceive and assess the reliability not only of the system but also of the contact employee and the service company who stands behind it and performs the service. A joint check integrating the customer in the

check-up might be even more advisable. This way, the process activity would be shifted from an internal activity to the line of interaction. As a consequence, the customer would have an immediate feed-back that everything is in order and the customer's security environment is re-established. This aspect also complies with the required process design criteria.

Sifting through the company documents and through the service blueprint as a general overview of the process offers the possibility to identify problems concerning not only individual activities but also a range of aspects in terms of a broader scale. These are as follows:

- Allocation of responsibilities: the service blueprint reveals that internal responsibilities on the service provider's side are not allocated on a problem-oriented basis. That is, the first contact person the customer speaks to is not necessarily the one who is familiar with the problem to be solved. Not only does this aspect relate to the idea of visibility within the process design but, in addition, it was also mentioned by several customers during the survey. In the long run, this may entail confused and also dissatisfied customers.
- Information material: scrutinizing the company brochures and tender material, the customer receives most information material, such as brochures, during the pre-sales period. Hence, the client is given a description of the service product in form of the provider's submitted offer. But apart from the general terms and conditions, the client does not receive any tangible evidence of the service when purchasing it. It shows a low level of communication of knowledge towards the customer.
- Service description: the analysis of the information material further shows that the service description is rather bare, appearing in precisely the usual contractual terms and conditions. This feature can also be interpreted as a weak means of enlarging customer knowledge.
- Customer invitations: taking a look at the pre-sales period, it becomes clear that customer invitations are only made occasionally and on an irregular basis. The same applies to customer workshops. Precisely those aspects would deepen customer knowledge and offer the customer more process visibility. Thus, it would contribute to higher customer knowledge as well as comply with the process design criteria, given that the service itself is very intangible and elusive.

- eTTS-access: throughout the service process, clients cannot access the eTTS, instead they receive a ticket via e-mail or are informed via telephone, saying that the service is in process. That means the customer is not notified of the actual status of the order processing, which does not comply with the process design requirements of visibility and controllability.

7.2 Results of the expert interviews

The qualitative interviews were undertaken to obtain the service company's perspective on the service process. That means it was to find out whether – from the provider's angle – the service process is perceived as one overall process comprising the customer as well as the internal side. Additionally, the general understanding of customer processes from the provider's point of view was to be elaborated. For this purpose, all questions were designed accordingly and answers were checked for evidence of the central components of the model framework, namely customer knowledge, process design, and the customer script. In particular, the responses were also scanned for clues to process modeling, process focus – internal/external, customer integration, perception of the customer and addressing the customer as well as process problems.

Overall, the interviews reveal that the focus of the service company is still set on optimizing their internal processes and customer processes are not sufficiently taken into account. The optimization of internal processes is based on the widely employed modeling tool called ARIS. It is used to display several process layers, starting with the process value chain as the super-ordinate unit, then describing the following unit in a sub-layer as an event-oriented process chain in the form of a flow-chart model. This layer deals with the core process units of the service transaction and can be considered the most relevant layer. Anything concerning process modifications is implemented in these core processes. Based on that layer, process activities are split up once more, resulting in entries in company manuals and so on. All process illustrations and process discussions within the company always refer to the modeling of core processes. The core process itself is neutral towards the type of service product[111]; instead, the underlying process modules relate to adjustments and specifications for distinct

[111] Process modelinging and process design is set up not only within the company unit of the CSC Security but company-wide. That means other company units, as for instance T-LAN services, are based on the same course of action in terms of the core process procedures. Also, the relevant persons within the company, e.g. core process manager or process designer, are in charge of the processes for various service products.

service products. The company places emphasis on an extensive standardization of the internal processes as well as on high consistency and a standard nature of the employees' procedures which is all based on ITIL[112]. Attention is particularly drawn to the internal comprehensibility of the process. There is not much consideration of process perception from the customer's view.

Within ARIS-modelinging, the interface to the customer is identified using colours and shapes: yellow boxes signify company-internal units and white boxes indicate externals, i.e. the client company. Using a border on the box, it is noted if the clients have to carry out the activity entirely by themselves or if they merely help the provider with it. As far as process design is concerned, customer processes are taken into account in terms of the customer interface. They are considered as triggering the service transaction process itself. From the service provider's perspective, customer processes are rather understood as the customer's requirements which are then transformed into the service performance and result in customized service product solutions. In modelinging the customer interface or any other consideration with regard to the client, there is no differentiation between the customer company as a whole and individual contact persons. There is only one layer reflecting the customer activities. Also, customers are hardly distinguished according to duration of the business relationship. Concerning the size of the client company, there are the so-called key accounts which mostly have a more comprehensive service package, 'smaller' clients (based on profit gains), or 'political' customers who do not increase profits themselves to such a large extent but who might be of consequence with regard to fellow or potential new customers.

Even though the provider company is aware of the fact that the customer company has its own internal processes and procedures essential for the reception of the service performance, they blend it out and focus on an input-output understanding of the customer process. Thus, the customer process is veiled. The provider rarely gets the chance to gain an insight into the customer company and does not really receive much information except from the industry sector the company works in. Most customer information is acquired through hotline activities, i.e. customer contact employees from the customer's IT administrators. Matters are

[112] Just as ISO regulations form the standard for many services such as facility management (see appendix 10 for a summary of the interview results), ITIL (Information Technology Infrastructure Library) represents the equivalent best-practice guideline for service providers in ICT industries. ITIL refers to all service management processes and their application during the entire service lifecycle. The central fields of application are service support and service delivery (MacFarlane and Rudd (2003)).

slightly different when considering the acquisition and sales activities of the consulting team who deal with the clients and set up policies and specifications before clients are 'handed over' to the service operation. In this phase, a lot of information is accessible to the respective sales department employees. The sales department acquires information on what the client company does, what is important and why it is of such importance. All this information can then be used to design and to operate the service product for the client. According to the experts' opinions, process design is made in accordance to the customer requirements. A lot of the named process design criteria like consistency and robustness and also controllability in the customer's perception are given due weight.

As it turned out from the interview results, high technical knowledge on the customer's side represents an enormous advantage for operating the service. Customers with a higher knowledge level can deliver better and more useful information before and during the service performance and can therefore be considered as better qualified co-producers. The company experts also concede that customers need to be better informed from the provider's side when clients enter the phase of the actual service operation, i.e. when they are admitted to the build and run phase. Here, it is important that customers are informed about the processes so that they are able to comprehend the course of actions. So far, this feature is still lacking given that customers merely receive a very rough outline of the service process. The focus is set rather on simplicity in the process descriptions rather than high transparency and visibility. The service experts of the company also admit that most customers possess a process image of a reference process which has been suggested to them from the sales department. Yet, this reference process, given as an impression during the sales phase, often diverges from the actual process.

At times, this lack of a process image on the clients' side can be one of the reasons for difficulties during the service operation. Often, the customer's expectation of immediate problem solution, when it coincides with a temporary unavailability of the relevant person, may lead to time-critical problems for the client. Another reason for time delays in the service operation can be insufficient information in the customer database which is not administered appropriately within the company. Time delays in the process of solving technical faults, cost increases or, if it comes to the worst, the loss of a customer can be the result.

7.3 Survey results

This section attends to the customer survey which was carried out on basis of a standardized questionnaire as described in chapter 6. In contrast to the two preceding sections which were dealing with the analysis of qualitative data, this part is concerned with quantitative data only. At first, data editing will be addressed and the data will be prepared for analysis purposes by testing the reliability of the data. Also, factor analysis results will be presented. After the explanation of the descriptive statistical data results the discussion attends to the testing of the hypotheses.

7.3.1 Editing and preparation of the data

Before starting the quantitative analysis of the survey results, some aspects concerning the data have to be considered. The type of questions and the used scales had already been discussed in chapter 6. However, apart from the value labels of the 5-level ranking-scale (adapted from the school marking system: 1 – 5) most questions were based on, two additional categories were arranged for missing data, i.e. for questions a customer was not willing to answer (9) or questions which did not apply to the respondent being asked (99). All data was also checked again for errors, i.e. illegitimate codes, illogical relationships or rules in filter questions such as the customer satisfaction item of 'suggestions for improvement'. In order to apply several tests, the nominal variables (1-2 dichotomy variables) such as the items of "contradictions" (process design) or "process construction" (customer script) were dismantled and translated into dummy variables with different coding. Also, for several test, the hypotheses in particular, items based on the same scale were summarized into one overall variable which was to describe the total construct. After the data had been edited and prepared, it was ready for the analyzes tests.

7.3.1.1 Testing goodness of the data: reliability analysis

Whereas the previous chapter (6.11) already addressed the goodness of the measures thoroughly, this section here merely intends to consider the reliability of the collected data as a first result as well as for reasons of further analysis tests in the upcoming chapters. For testing the goodness of the data in the context of the analysis part, it was mainly looked at the reliability of the constructs. Reliability relates to the characteristic of the measurement instrument that similar input data entail similar output data. In this respect, Cronbach's alpha

is used as a measure of reliability (Cronbach 1951) of the construct and can be considered as the lower bound of the true reliability of the survey. In mathematical terms, reliability denotes the proportion of variability in the survey responses as the result of differences in the candidates. Answers to a reliable survey will therefore differ because respondents possess different opinions. Cronbach's alpha is based on the number of items in the survey and the ratio of average inter-item covariance to the average item variance.

First, reliability is tested for the construct items of customer knowledge. A relatively low result of Cronbach's alpha (0.425) indicates that the reliability for these four items fits for certain duties only but cannot be considered as the optimal compilation of variables.

Second, reliability is evaluated for the construct of process design. Here on the contrary, Cronbach's alpha produces a very high value with 0.921. Also, the results of the corrected item-total correlation in the table show that no item would have to be eliminated. Hence, this test set of variables achieves a very good reliability.

Then again, the construct of the customer script delivers a similar result like the first construct under consideration. The reliability coefficient is no higher than 0.435. Here, as well, the selected items do not necessarily qualify as the most favourable compilation of items.

In contrast, the set of items used to capture the construct of customer satisfaction prove high reliability. With 0.953, Cronbach's alpha aims at the highest reliability coefficient within this study. Since the construct 'process efficiency' does not consist of several items but is calculated as process-ordering time out of existing figures from the service supplier's data base, the reliability analysis cannot be applied. However, reliability must be tested with regard to the combined construct of 'process success'. A reliability analyzes is carried out twice: At first, reliability is tested for the single items of customer satisfaction along with the recoded variable of process-ordering time. Although the reliability coefficient is very high with Cronbach's alpha being 0.912, the corrected item-total correlation result shows that the variable of process-ordering time should be eliminated because it cannot be used. It is the only value in the table with a negative and very low value. Thus, the construct of process success which was originally conceptualized as a combination of process efficiency and process effectiveness should rather be split into two separate sub-constructs. This statement is supported by the results of a further reliability analysis: When reliability is tested for customer

satisfaction in a summarized item form and process-ordering time as the other item, Cronbach's alpha merely comes out as 0.121. Therefore, process success as a combined construct consisting out of the two sub-constructs process efficiency and process effectiveness cannot be used for any further purposes because analysis results would not be sufficiently reliable. Consequently, process efficiency as process-ordering time and process effectiveness as customer satisfaction will be considered and analyzed separately in the following course of the study.

7.3.1.2 Factor analysis

The objective of the factor analysis is to identify variables with strong correlations among themselves which can be put together into one factor. That means it is attempted to categorize those factors that fully explain the context between different variables. In that sense, factor analyzes were done for all four out of five sets of variables. The fifth one, namely the process-ordering time, is left out on purpose because it only consists of the single variable time itself.

When doing the factor analysis for the set of customer knowledge variables, the results turn out to coincide with the factors drawn from theory. After applying the rotated factor solution, two main components can be extracted with two initial eigenvalues above 1. Whereas the two variables 'informing oneself' and 'being informed' correlate with the first factor, the variables 'level of experience with similar services' and 'degree of expertise' load on the second extracted factor. Thus, the first factor relates to direct customer knowledge in terms of information while the second factor rather refers to the customer's experience in terms of expertise and proficiency. These two factors exactly match the sub-dimensions of the construct derived from the theoretical conceptualization (see section 4.3 as well as section 6.10).

In the case of the construct process design, the loadings do not completely behave as expected from theory. Here with the rotated factor solution, as well, two main components can be made out. Variables such as 'process consistency' and 'process logic' load on the first factor. In contrast, variables as for instance 'option of intervention', 'following the course of the process' or 'process comprehension'. This shows that the first factor more likely refers to

process characteristics and features, whereas the second factor rather concerns process participation. Hence, a meaningful categorization can be found in the two factor components. The variables of the construct 'customer script' do not show any clear factor loading behavior. Neither the unrotated nor the rotated factor solution brings out any definite components. Even with the rotated solution, results are not unambiguous which can also be concluded from the screeplot illustration.

A similar case appears when doing a factor analysis for the set of customer satisfaction variables. Here, although the table of the 'total variance' shows two eigenvalues of 5.099 and 1.246, the component matrix, despite two identified factors, does not reveal a clear result: Overall, there is only one variable which loads on the second factor with a correlation of 0.678. But that variable cannot clearly be attributed to the second factor because it shows nearly the same loading (0.644) towards the first factor. Therefore, a definite categorization among the variables for customer satisfaction cannot be stated.

7.3.2 Descriptive data results

This section concerns the overall results that could be gained from descriptive statistics and are of relevance for further data analysis and their interpretation. Thus, the descriptive data results will be represented in accordance with all constructs.

7.3.2.1 Customer knowledge

The status of the customer's foreknowledge and expertise turns out to be rather mediocre. The majority of the items does not achieve any better evaluations than "satisfactory". Above all, the results show that customers do not invest much effort in reading the information material of the service company beforehand. Thus, nearly 80% of all customers do not grant their time for reading through the information documents of the service provider as the following exemplary Figure 7-2) illustrates:

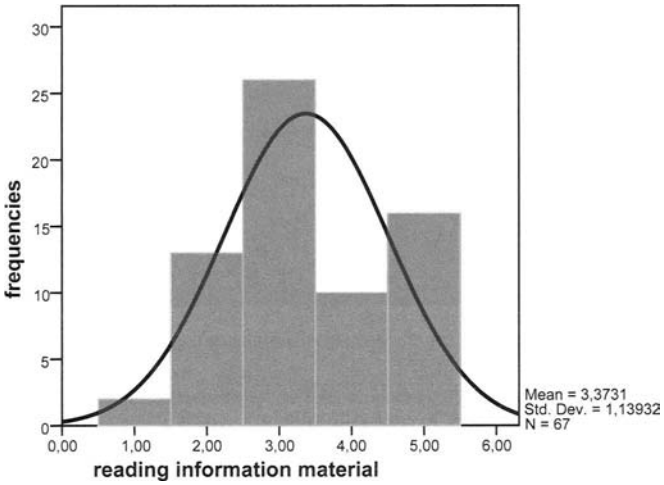

Figure 7-2: exemplary item (informing oneself) of the construct 'customer knowledge'

As the figure also exposes, data is normally distributed which cannot only be drawn from the shape of the graph but specifically from skewness values: skewness values do not exceed 1.

With regard to the respondents' expertise it can be said that although the item 'level of expertise' is rated with the best result (mean: 2.14), this needs to be considered carefully: for the most part, respondents were IT-administrators or EDP-managers. Consequently, the respondents are classified as experts due to their job position in the company.

7.3.2.2 Process design

Those items that respondents rate with the best results are 'process logic', with a mean of 2.0 and 'process comprehension', with a mean of 2.1 (see Figure 7-3). The former even shows the smallest range which signals that customer ratings do not really diverge and also emphasizes the high evaluation of the variable. Thus, 75% of all respondents perceive process logic with

'excellent' or 'good'. Besides, nearly 80%[113] of the customers consider the process as clear and unambiguous, not perceiving any contradictions within the process. This feature, again, confirms the logic of the process construction.

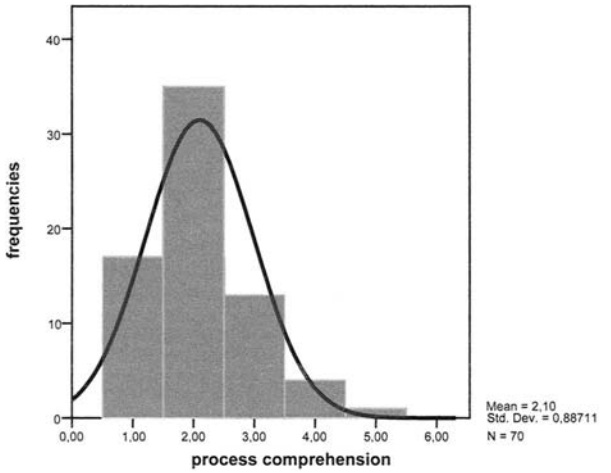

Figure 7-3: exemplary item (process comprehension) of the construct 'process design'

Also, 'process consistency' and 'feed-back' were ranked rather high: After all, 70% of the customers feel that the process consistency is either excellent or at least good and the item receives a mean of 2.0, while the item feed-back is ranked by the same percentage, yet with a slightly poorer[114] mean of 2.1.

In contrast, the item 'feed-forward' is ranked second last with a mean of 2.5. The variable 'influential control' receives the poorest ranking with a mean of 2.6. That means, these items are rated by clients with 'satisfactory' and thus, about 50%, applying to both items, evaluate these items with satisfactory or worse. Hence, whereas customers mostly feel that their performed actions are confirmed by the service provider, they do not receive sufficient information on the further course of the service process. Clients prefer to know what is going

[113] This item was originally conceptualized as a nominal scale as described in chapter 6 and was only later recoded and transformed into an ordinal scale.

[114] It should always be noted that higher numbers, here, indicate lower evaluations as it is always referred to a school ranking system.

to happen next because they want to feel in control of the service situation. Once they have carried out certain steps in the service process, they have leave the rest of the activities to the service employee they are communicating with, i.e. they do not know what is happening backstage in the service supplier company. Also, given that clients evaluate the other item 'influential control' with the same ranking, it shows that they feel as being left out of the service performance. Once, they have contributed their part, the rest is out of their control. They have to hand over the full responsibility to someone else which they might not feel at ease with because they feel no longer integrated but instead, feel excluded from the process. Not knowing, for instance, what state the process order is in and how much longer it takes until the order is completely handled, causes uncertainty for the customer.

7.3.2.3 Customer script

Both items 'input contribution' and 'automation' are rated with the best values (mean: 2.0). That means about 70% of all questioned customers feel they know when and how they have to participate in the process (see Figure 7-4). Even more, 75% of all respondents perceive their own actions during the service process to be carried out quite automatically. In addition, this endorses the rating of the process design features 'process comprehension' (see section 7.3.2.2) which refers to the input contribution from the customer side, as well.

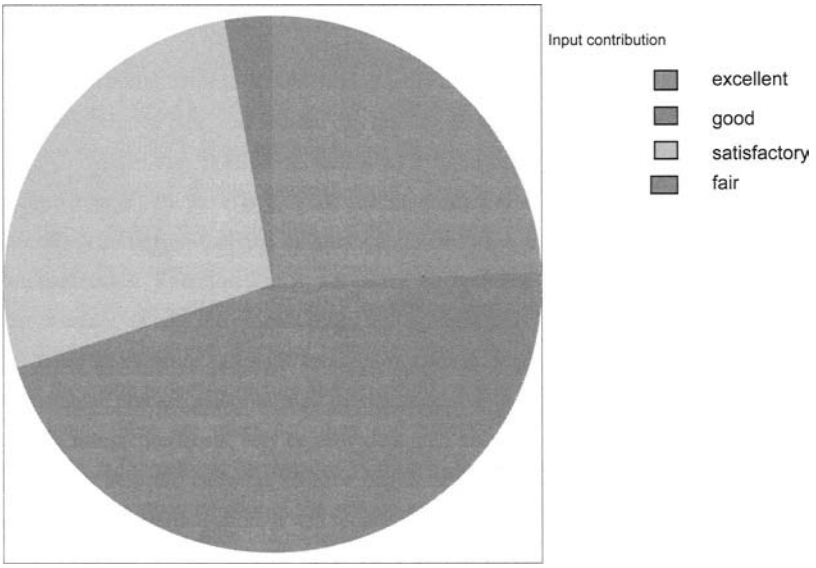

Figure 7-4: exemplary item (input contribution) of the construct 'customer script'

In contrast, nearly 40% of the respondents have a process image of the entire service process that is only rated with 'satisfactory' or 'fair'. This aspect coincides with the responses above on customer knowledge: if clients do not read the information on the service process properly, they lack an idea of the backstage events, i.e. the events that happen in the company of the service provider. Yet, the question which receives the worst ratings deals with the script complexity measured by the decision points throughout the service action sequence. The variable "decision points" had to be additionally recoded since a high number of action alternatives opposes customer script development. A smaller and limited number of action alternatives, on the contrary, benefits the customer script. Given that the variable "decision points" is rated with a mean of 2.9, the number of decision points is too high. This refers to a slightly overstrained script complexity for the customer script to develop best.

With the third script dimension 'number of scripts', the responses reveal that more than half of the customers perceive the process construction as one process entity whereas only 40% feel that the service process consists of a line-up of stringed process sections. As the only nominal variable among all other variables, that the construct customer script is operationalized with, this variable was eliminated ex post when the variables are summarized for regression purposes. As the variable can not be transferred into an ordinal variable ex post without values becoming invalid, the dimension 'number of scripts' is ignored in the later stages of the analysis.

7.3.2.4 Customer satisfaction

Customer satisfaction is considered as a representation of the service quality. Hence, it refers to process effectiveness as the outcome of the service. In this context, the staff of the service provider is ranked with the best results; namely, the friendliness as well as the technical competence of the contact personnel is rated with means of 1.5 and 1.7. Also, the overall performance quality of the service with a mean of 1.8 is evaluated on top of the item list. While 80% of all customers award the overall performance quality of order processing with at least 'good' (see Figure 7-5), even 87% rate the technical competence of the service contact staff as good or better and almost all respondents, i.e. 92% evaluate the service staff's friendliness with at least good but mostly excellent.

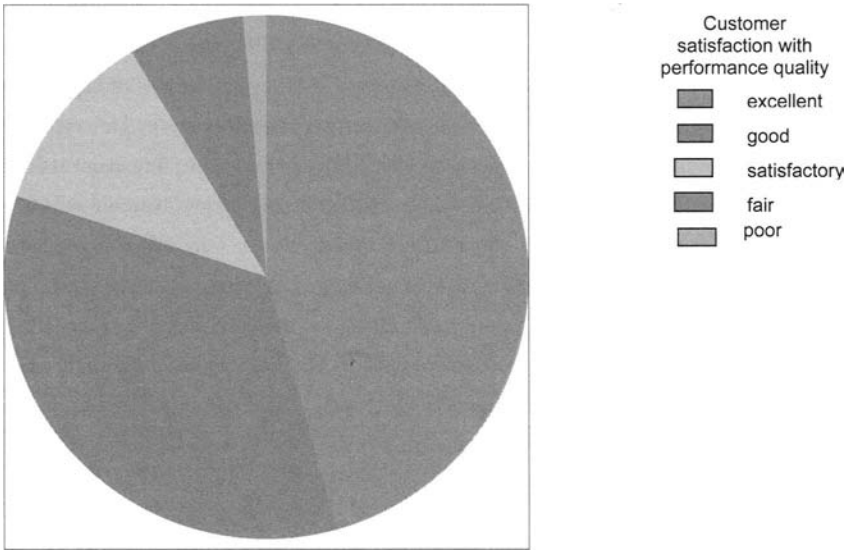

Figure 7-5: exemplary item (performance quality) of the construct 'customer satisfaction'

In contrast to the high rankings of the staff performance, all items which receive relatively poor evaluations are connected with the service provider passing on and delivering information. The level of information that clients receive when their network is either attacked or fails is ranked with 2.4 or even 3. More than 50% of all respondents rate the information material that is handed out to the clients only as 'satisfactory' or worse. Also, the respondents' satisfaction with the web-based reports is rather low: it is rated with a mean of 2.3. The question for the status notifications is rated the same (mean: 2.3). With a mean of 2.4, the probability that clients recommend the service supplier to fellow customers is not at its best. Since the acquisition of new customers depends on mouth-to-mouth publicity and this concluding question aims at an overall-rating of client satisfaction, the result could have definitely achieved higher marks . If clients do not receive enough information, they might feel left out and less integrated in the process which causes uncertainty as already shown section in 7.3.2.2. Therefore, satisfaction evaluations which are quite obviously ranked lower when concerning information delivery from the service provider's side may have an indirect impact on the probability of recommendation to other clients, as well.

7.3.2.5 Order-processing time

The order-processing time had actually not been collected through the survey itself but was in fact gathered from the service supplier's eTTS data base system. For reasons of correctness, this point could have been categorized as a mean of the content analysis. However, this section appears at this point of the thesis because the retrieved data forms a fundamental part of the quantitative analysis. At first, the figures were collected as raw data directly from eTTS: it was looked at the previous three service events and the time that was needed to process the order. As a second and essential step, all figures had to be related to the SLA of the respective customer in order to put all time figures on an identical basis. Then, it was calculated how much the actual time needed had either fallen below or had exceeded the time arranged in the SLA contractual agreements. That means the resulting value was x-times slower or faster than the agreed target time. Still based on the SLA target times, this result was then converted into a percentage-figure, i.e. it was calculated how many percents of the actual target time according to SLA were needed to process the order. The result was a metric variable. That variable was then provided with ordinal value labels[115]. As a last step, the variables were recoded in accordance with the school marking ranking-system which used for all other variables, as well.

As a result, about 20% of all orders, for example, were processed exceeding the target time with 100% or even more. And nearly 50% exceeded the target time of order-processing between five to 50% (see Figure 7-6). The graph as well as skewness values indicate that the variable does not show a normal distribution. Overall, the figures point out that the service company under discussion shows a very high level of order-processing efficiency.

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[115] Category 1 was assigned to times that were up to 2 % faster, category 2 was assigned to times 2.01-5% faster, category 3 for 5.01-50%, category for 50.01-100%, and category 5 for times exceeding with 100% or more.

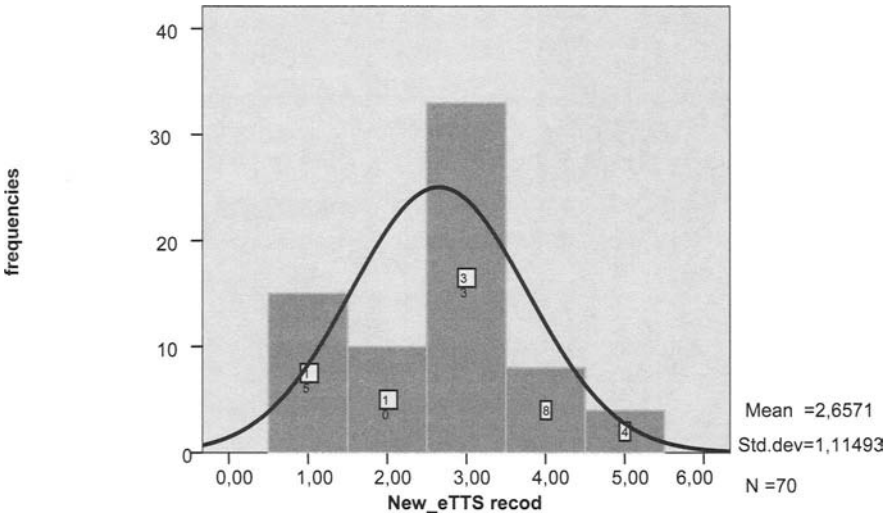


Figure 7-6: exceeding the order-processing target time in %

7.3.2.6 Further results

As far as some sample characteristics, or better "demographic" data of the customer companies is concerned, it was only looked at the geographic origin, i.e. where the customer company's headquarter is located. With that, five major regions could be identified which can be identified in the figure below (Figure 7-7). The majority of the companies have their head office in southern Germany, as well as in the middle of Germany and in the south-west. Location is found to be of no relevance for any of the other variables as the Kruskal-Wallis[116] test proves: With all significance values above .05, the location does not affect the results of the other items such as customer knowledge or customer satisfaction.

116 The Kruskal-Wallis test was applied due to the group number, i.e. five different regional groups.

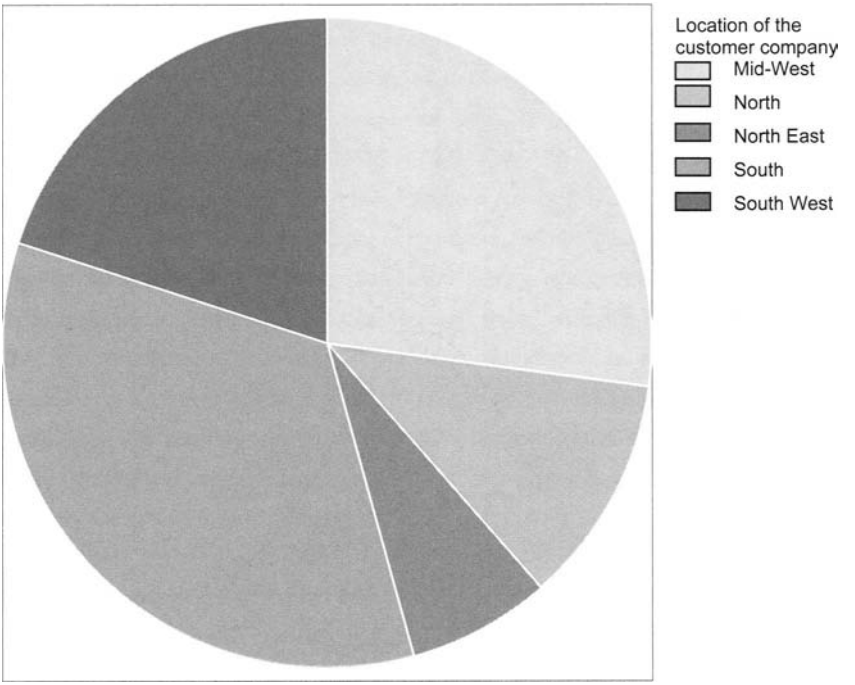


Figure 7-7: Geographic location of the customer companies

Group differences were also tested for different customer categories and SLAs. Here, the Mann-Whitney-U test[117] was applied: it demonstrates that the survey results do not vary significantly between watchpack customers and checkpoint customers because all significance values are greater than .05. The same applies to differences between customers of dissimilar SLA contracts: here, as well, no significant discrepancies can be identified.

7.3.3 Hypotheses testing

Since the testing of the hypotheses is based on regression analyzes, the conditions need to be met for regression models to be applied. These terms refer to the condition that multicollinearity between the variables has to be avoided; the conditions have to relate to the

[117] In these cases, the Mann-Whitney test – instead of the T-test - was used for comparing means between two groups. Since the T-test can only be applied to strictly normally distributed and interval-scaled data and the data was ordinal-scaled, the Mann-Whitney test offered the more reliable and flexible alternative.

independent variables of customer knowledge and process design and will be explained in the following.

One method to expose collinearity is to identify the measure of r-square for every independent variable x, which would arise from regression of x on all other independent variables. The value of r-square as 1 indicates that the variable can result from the linear combination of the other independent variable. The value of the tolerance, considering the independent variables of customer knowledge and process design, must be relatively high to reject the assumption of multicollinearity. With 1 – r-square as the tolerance of the variable process design being 0.777 and therefore rather high, multicollinearity can here be excluded.

Also, linearity within the parameters has to be demonstrated which can be done by testing linearity through collinearity diagnosis as well as Anova mean rankings. Since the eigenvalues exceed 1 and thus, are not close to zero, the assumption of collinearity can be rejected. Collinearity is a problem when a component associated with a high condition index, i.e. exceeding 15, contributes substantially to the variance of the other two variables. With the condition indices being not higher than 10, collinearity does not arise.

Furthermore, the condition of parameter linearity can be supported through the tests that demonstrate the independency of the factors by the avoidance of autocorrelation. Autocorrelation can be tested with the Durbin-Watson statistics which proves that the residuals of related cases have to uncorrelated. The coefficients of the Durbin-Watson statistics can produce coefficients between 0 and 4; to avoid autocorrelation the coefficient needs to be close to 2. That means here, with the coefficient being 1.843, autocorrelation can be rejected. Also, the diagnosis of standardized residuals does not indicate any dependencies between subsequent residuals and the residual statistics appear as a normal structure.

In addition, the condition of linearity can be sustained by testing homoscedasticity and the normal distribution of the residuals. The units of measurement are multiples of the standard deviations. Due to the standardization, the mean values represent the origin of the coordinate axes. With heteroscedasticity, the residuals would show a significant correlation with ^y (*ZPRED); since this is not the case, it can be concluded that with reference to the dependent variable of the customer script , homoscedasticity exists. Another diagram is used to prove the normal distribution of the residuals of the dependent variable customer script.

The final term that needs to be substantiated concerns the completeness of the model; that means it is to find out if all or sufficient relevant variables have been taken into consideration. If not all relevant influential factors can be derived directly from theory, which is denoted as 'underfitting', it results in an incomplete model draft. This needs to be justified. 'Overfitting', on the contrary, describes the opposite case: that means any variables are included in the model in order not to miss any relevant variables. As a result, the model contains too many explaining variables that cannot withstand a reasonable testing and leads to inefficient estimated values. Therefore, referring to the considered model, it can be argued that the variables of the construct 'process design' are drawn from theory (see section 4.6). The variables of that construct were also collected on basis of double items to increase the goodness of the measures. The variables of the construct 'customer knowledge', as well, are derive from theory (see section 4, 4.3 in particular) and had also been adopted from an earlier study (Gan 1992).

Now, with the argument of multicollinearity successfully disputed, regression analysis can be applied in the following sections to test the hypotheses.

7.3.3.1 Hypothesis 1

The first hypothesis supposes a relationship between customer foreknowledge – in terms of the customer's knowledge and expertise when entering the service situation – and the customer script. As a first step, this relationship is tested for correlation. Instead of the Pearson correlation coefficient, the Spearman-Rho coefficient is used because it can also be applied to variables that are ordinal-scaled or not normally distributed. Therefore, this coefficient offers a greater scope in its application. The detected coefficient indicates a correlation of nearly 0.5 (Spearman-Rho: 0.496).

Now, this correlation needs to be tested for regression. Linear regression will be applied: first the single analysis form will be used with one independent factor; later the multiple analysis form with several independent variables will be used to test the entire relationship including both independent factors. In any case, linear regression is suitable because it can be applied to interval as well as to ordinal-scaled data (Bühl and Zöfel, 2000, p. 334). The analysis will refrain from the ordinal regression as it only refers to an ordinal-scaled dependent variable but

requires exclusively categorical-scaled dependent variables; interval-scaled variables are merely permitted as covariate factors.

The regression result with an R-square value of 0.265 is relatively small, yet, it indicates that the detected relationship is significant because the significance value is lower than 0.05. The residual sum of squares is rather high compared to the regression sum of squares saying that the model, i.e. customer knowledge as the only dependent variable, does not account for most of the variation in the dependent variable. For that reason, the model will be tested again for two independent variables, i.e. a combination of customer knowledge and process design. It can thus be checked later on whether the model will then achieve higher power of explanation for the variance in the variable of the customer script.

Up to now, it can be stated that there is a significant and positive, yet low influence of the variable "customer knowledge" on the variable "customer script." Therefore, the hypothesis 1 is confirmed on a provisional status as it will be tested again in combination with the other independent variable of process design (see section 7.3.3.3). Results will then reveal if the combination of both fits the model in a better way.

7.3.3.2 Hypothesis 2

The second hypothesis assumes that the process design of the service provider affects the customer script. Initially, the testing of the hypothesis 2 will proceed as the testing of the first one. Yet, in the second part, the sub-hypotheses will be tested which examine if or to what extent certain individual criteria applying to the process design and to the customer interface have an influence on the customer script. Also, the influence of the variable will be tested again in a model combination with the variable of customer knowledge (see section 7.3.3.3).

At first, the relationship between the overall-variable of process design and the variable of customer script will be tested for correlation. Here, as well the Spearman-Rho correlation coefficient will be used. The analysis results in significant and fairly high correlation with a coefficient of 0.73[118] and a significance value smaller than 0.05 (here: 0.00). Therefore, it

[118] In general, the Spearman-Rho correlation coefficient always indicates higher results than the similar correlation procedure of Kendalls Tau. Yet, outliers can be better identified with the latter one. In this context, however, the aim is to focus on the correlation as such, instead of dealing with outliers, in particular.

demonstrates that the relation between this independent variable and the customer script as the dependent variable is rather strong. This relationship between the variables needs to be tested for regression so that a potential type of relationship can be identified.

The regression analysis reveals an R-square of 0.517 with similarly high sums of regression and residuals. With a small significance value (0.00) of the F statistic, the variable process design successfully proves to explain some variation in the customer script variable. So far, a significant influence of the variable "process design" on the "customer script" can be made out. This is also illustrated in the scatter diagram below (see Figure 7-8). Hence, the hypothesis 2 is confirmed on a provisional status since it will be tested again in context of an overall model, i.e. in combination with the other independent variable of customer knowledge (see section 7.3.3.3 and also section 7.3.3.1).

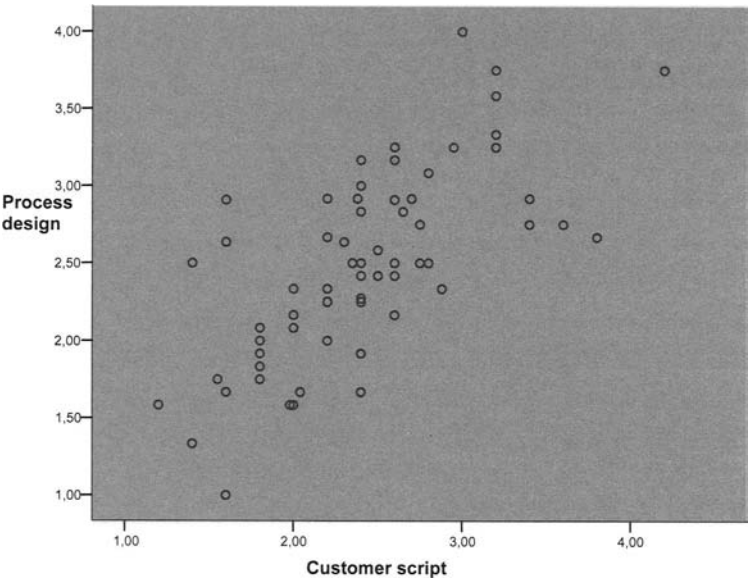


Figure 7-8: The relationship between 'process design' and the 'customer script'

As the variable of process design consists of several sub-dimensions, the hypothesis 2 was split up into five sub-hypotheses, as well. These deal with the analysis if the customer script is influenced by the individual process design criteria, namely learnability, consistency,

visibility, robustness, and controllability. For that reason, these single items will be tested for a relationship to the customer script. The correlation analyzes reveal significant influence of all single items; however, only the ones with the highest correlation coefficients will be tested for regression. These are the following items: 'feedback' (with a correlation coefficient of 0.642) and 'easiness to follow the process' (with a correlation coefficient of 6.7) as criteria for learnability, process consistency (showing a correlation coefficient of 6.19) as a criterion for consistency, process flexibility (with a correlation coefficient of 6.21) as a criterion for robustness, and 'transparency' (showing a correlation coefficient of 6.20) as a criterion for visibility. As the items demonstrate, the sub-dimension of controllability cannot be found among the ones with the highest correlation values. Nevertheless, this item will be included in regression tests despite its very low correlation value so that the dimension of controllability will be covered by the study as well and the sub-hypothesis 2E can be tested, too.

Subsequently, all individual process design items, as referred to above, undergo a regression analysis exposing the following results:

- The item of feedback has an R-square value of 0.402 and a small significance value. Yet, with regard to the variance analysis results and the regression and residual sum of squares values, the item alone does not succeed in explaining a high share of the variance in the customer script.
- The item of consistency shows an R-square value of 0.422 on an adequately small significance value. However, the variance analysis leaves a rather high share of the residual sum of square which indicates that the item does not explain much of the variance in the variable 'customer script'.
- Regression analysis for the item of flexibility results in an R-square of 0.442 with a sufficiently small significance value. Nevertheless, when considering the variance analysis results of the residual sum of squares compared to the regression sum of squares, the item cannot explain a high share of the variance in the customer script.
- A similar result can be found when regarding the regression analysis results of the item 'transparency'. Here, as well, the significance value is sufficiently small, i.e. below 0.05; the R-square value with 0.358 is slightly lower than for the preceding items.
- For the item of 'easiness to follow the process', the results of the regression analyzes are alike: The value of R-square is 0.428. The variance analysis values show a fairly

high residual sum of squares compared to the regression sum of squares but can be found on a low significance value (< 0.05).

- The last item to be tested is the item of controllability which was additionally included in the second step of the analysis for reasons of dimensional completeness of the overall process design. Here, the R-square value is extremely low with 0.067 and can therefore be neglected. This is also confirmed by the results of the variance analysis: the residual sum of squares is nearly twenty times higher than the regression sum of squares but above all, the significance value exceeds the critical value of 0.05. These results indicate that there is no linear relation between the process design feature of controllability and the customer script.

Overall, it can be reported that four out of five sub-hypotheses can be confirmed with a positive relationship (due to the positive values of the correlation coefficients) whereas the fifth sub-hypotheses has to be rejected. This results in the following statements:

- The sub-hypothesis 2A can be confirmed: the better learnable the service process activities, the more established is the customer script.
- The sub-hypothesis 2B can also be confirmed: the more consistent the service process is designed, the more established is the customer script.
- The sub-hypothesis 2C can be confirmed as well: the more visible the service process activities to the customer, the more established is the customer script.
- 2D as the fourth sub-hypothesis can be confirmed, too: the more robust the service process is designed, the more established is the customer script.
- On the contrary, the sub-hypothesis 2E has to be rejected due to a minute correlation coefficient and insufficient results of regression: the process design feature of controllability does not show a significant influence on the customer script.

7.3.3.3 Combining hypotheses 1 and 2

Based on the results of the two preceding chapters, the two variables of customer knowledge and process design will now be tested in combination for their influence on the customer script. With this step, the results will prove if the combination of both variables fits the overall model better. For the purpose of two independent variables, multiple regression analysis (including the stepwise method) is now used in contrast to the previous applied regression analyzes which were only considering one dependent variable.

As the results show, the variable selection is done in two steps corresponding to the two independent variables that were used in the analysis. R as the multiple correlation coefficient displays the correlation between the observed and predicted values of the dependent variable 'customer script'. The correlation coefficient for the second model, which includes both independent variables, slightly exceeds the first model, which only includes process design as the independent variable. In either case, the correlation coefficient is above 0.7 and therefore indicates a fairly strong relationship between the variables. With an R-square output of nearly 0.6 in the second step, it can be concluded that the variation in the customer script variable explained by the regression model is relatively high so that the model seems to fit the data well. Also, the R-square values offer an indicator for the model that fits the data best and it reveals that the combination of both independent variables makes the better model. According to the variance analysis, the second model, i.e. the one including both independent variables, results in a regression sum of squares of 14.9 and a residual sum of squares of 10.03. Thus, the variation accounted for by the assumed regression model is moderately satisfactory. The variation that is not accounted for by the model, displayed in the residual sum of squares, might be caused by the fact that overall the number of variables that the model has been taken into account is reduced to a minimum.

In sum, it can be stated that hypothesis 1 and 2 can both be confirmed. Thus, it can be concluded that the customer's foreknowledge when entering the service situation and the service provider's process design have a positive influence on the establishment of a customer script.

7.3.3.4 Hypothesis 3

The third hypothesis assumes that the customer script influences the service process success. This hypothesis is split up into two sub-hypotheses, namely the influence on customer satisfaction and the influence of process efficiency in terms of the order-processing time. As preceding tests have shown (see section 7.3.1 and 7.3.2), the two variables originally intended to describe the construct of process success as one overall variable, are not compatible with each other. Descriptive data results completely diverge and the variable of process efficiency does not have normally distributed data. Therefore, both sub-hypotheses will now be

examined after each other and the outcome will be considered separately from each other as already suggested in earlier sections of the thesis.

The output of the correlation hypothesis analyzing the intensity of the relationship between the customer script and customer satisfaction delivers a fairly high correlation coefficient of 0.728 on a sufficiently small significance level (< 0.05). Thus, in a subsequent step, the variables will be tested for regression.

The first output of the regression analysis displays R[119] with 0.759 and thus indicates the correlation between the observed and predicted values of the dependent variable 'customer satisfaction'. In this case, the correlation value points to a relatively strong relationship between the customer script and customer satisfaction. Considering R-square being 0.576, it can be inferred that the variation in the variable of customer satisfaction explained by the regression model is fairly high. Therefore, the model seems to fit the data well. Also, according to the variance analysis, the regression sum of squares shows higher values (~19) than the residual sum of squares (~14). That means the variation in customer satisfaction accounted for by the assumed regression model is rather adequate. With the significance values being below 0.05, the relationship proves to be significant, as well. Consequently, it can be stated that a more established customer script has a positive influence on customer satisfaction (see also Figure 7-9).

[119] Since the Spearman-Rho coefficient was applied to test correlations, R does not perfectly correspond to the correlation coefficient as compared to Pearson correlation.

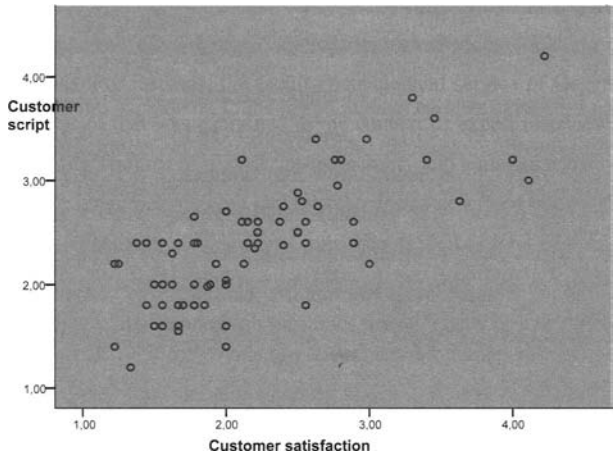


Figure 7-9: Relationship between the customer script and customer satisfaction

The second sub-hypothesis attempts to detect a relationship between the customer script and process efficiency. Here, the correlation analysis produces a very low result with 0.147 but on a significance level of 0.225, the result is far from being significant. Here, with a minute R-square value (0.028), a non-significant significance value of the variance analysis and a residual sum of squares which exceeds the regression sum of squares by far, a regression analysis does not deliver any further insights than the already confirmed ones: A significant relationship between the customer script and the order-processing time, as a representation of process efficiency, cannot be identified.

In sum, it can therefore be concluded that the third hypothesis should be considered in two respects: The sub-hypothesis 3A can be absolutely confirmed; that means a customer script positively affects customer satisfaction. The sub-hypothesis 3B, on the contrary, has to be rejected as no significant relationship between the customer script and process efficiency in terms of process-ordering time can be detected.

8 Theoretical and practical implications

Based on the empirical results of the foregoing chapter as well as on the theoretical argument of the first part of the thesis, this chapter will highlight implications for theory as well as for practice. First, implications with regard to transaction cost theory will be elaborated and a new service typology will be developed that invokes script-related dimensions and transaction cost theory at its core. Then, the chapter will expand upon the consequences for various theoretical subjects such as service engineering and service innovation as well as service export. New research paths that have been elicited through the discussion will be proposed. Thereafter, the chapter will focus on propositions for the company that has been hosting the research study.

8.1 Theoretical implications

8.1.1 Implications for TCE

For transaction cost theory, the thesis reveals consequences in various aspects: the analysis and integration of customer scripts is not only essential for the service provider and the customer from an individual perspective, it also has consequences for the service transaction as a process entity. In adition, from a more comprehensive and macro-perspective view, it facilitates the differentiation into different service types (see section 8.1.2).

Considering the fact that transaction costs arise on both sides of the process – i.e. for the service provider as well as for the customer – scripts represent a crucial factor for identifying sources of transaction costs. Transaction costs are incurred for internal and external coordination activities, i.e. on the one hand within a company for arrangements between departments, units or general responsibilities as well as, on the other hand, between firms as external partners for negotiation, information and enforcement. The extended blueprint version which includes the customer process helps the service provider to detect critical activities or process sections throughout the service transaction process that might be prone to elicit complex coordination and potential process disruptions. For that purpose, the script-integrating blueprint offers a tool for improving information about the customer process and thereby about the overall service transaction process. That is why it can reduce transaction costs with regard to the acquisition and employment of information. Since more information

is made available ex ante, i.e. when designing the process, there is less information to be coordinated during and after the service transaction.

For the customer side in particular, the learning of scripts is of relevance because it helps the client not only in one specific service situation. However, given that scripts are adaptive, customers can also apply scripts in modified service processes. This offers customers the chance to save cognitive capacity and thus to decrease transaction costs. The reason for that is that fewer coordination activities, such as information or monitoring, are incurred in subsequent service situations. Scripts as an adaptive form of knowledge relate to dynamic transaction costs: unlike static transaction costs that can factually be reduced because they are anticipatable, dynamic transaction costs involving learning processes can only be handled. The learning of a service process sequence and the actual application of those new capabilities to manage uncertainty diverge with regard to time. If the script knowledge that the customer develops from one service situation will be employed in a future service situation, it can be assumed to support the handling of uncertainty. The aspect of learning and adaptation in scripts also leads to the consequence that the scripts of the service operator and the customer are able to adjust to each other. Therefore, scripts considered as institutions (see section 3.3.3) may represent a useful and important instrument to complete contracts and offer a way to facilitate service transactions.

Since the blueprint helps to analyze which parts of the process cause what type of transaction costs, the extended blueprint version can refer to the cost analysis in a twofold perspective: if service providers aim at aligning their own internal processes as well as possible with the customer ones, they have to provide the minimization of transaction costs throughout the process. Activities on the line of interaction also affect supporting activities in subsequent blueprint levels. Therefore, it is necessary to optimize the process beyond the line of interaction and to take the process entity into account when designing the service process. The occurrence of dynamic and static transaction costs can be transferred to the activity levels of the customer process side and may be reproduced as a mirror image. In order to minimize dynamic transaction costs, service providers then need to work out in what way the process design may help the customer to save cognitive capacity. If the process design allows for simple customer participation, it will reduce dynamic transaction costs for the client as well as the provider because it reduces uncertainty within onstage and support activities on both sides. In a subsequent step, the argument can further refer to the spheres of uncertainty: to be

precise, uncertainty of integration, production and disposition in customer integration processes (for more detail, see Fließ (2001) and section 2.2). Thus, to start from that argument and take a broader perspective: if the uncertainty factor within those activities is eased, it also helps to reduce internal coordination activities within the other activity levels because it supports a better ex ante planning.

And finally, the analysis and the integration of scripts into the service process can substantiate the differentiation of service types from a transaction cost theoretic angle. As will be shown in the next section (section 8.1.2), script-related aspects can be used as the major dimensions for a service classification.

8.1.2 Transaction cost analysis in different service exchange situations: a typology

Based on the previous findings, a service typology can be developed that suits the context of customer service scripts from a transaction cost theory background. By identifying distinct service dimensions, different service situations can be classified and treated accordingly, in order to allow for customer scripts and keep transaction costs low.

As services increasingly dominate marketing thinking (e.g. Day, Deighton et al. 2004; Vargo and Lusch 2004), traditional service characteristics used to classify service types need to be revaluated. Vargo and Lusch (2004) argue that marketing now encompasses dynamic, evolutionary processes in the application of knowledge, skills and customer integration processes within service production. Consequently, services should be categorized based on criteria that reflect these parameters and allow for these processes to be relevant for marketing and management theory. Given that most service process models seem to be focused on the internal activities of the service operator and their optimization, there is a general need for enhanced integration of the customer process. Following this line of argument, the intention is to develop a new approach for the classification of services. A service typology can be developed that suits the context of customer service scripts from a transaction cost theory background. By identifying distinct service dimensions, different service situations can be classified and treated accordingly in order to allow for customer scripts and keep transaction costs low. So far, there is no service typology which helps to grasp implications for efficiency and effectiveness.

This line of argument will proceed as follows: first, existing service typology models which seem to be relevant for the research purpose will be cited. Subsequently, these existing models will be reviewed with regard to shortcomings and inadequacies in allowing sufficient consideration both of the customer scripts and the transaction costs involved. After categorizing sub-dimensions for the development of a new integrated service typology, section 8.1.2 concludes with the introduction of a new service typology.

8.1.2.1 Existing typologies for service exchange situations

Two major tracks can be identified from the literature. Embracing marketing and service operations literature, the first track is extensive and amenable to division into several subgroups. The track relies on classic distinctions of service characteristics, that is, criteria used to differentiate services from goods. Examples include Shostack (1977), who uses the criterion of (in-)tangibility as well as complexity and divergence (Shostack 1987), and Chase (1978) who draws on the extent of required customer contact. Similarly, Bowen (Bowen 1990) like Mills and Margulies (1980) focus on the levels of contact, customization and the personal interface of the service. Other authors also combine customer contact with the dimension of intangibility (Bowen and Bowers 1986). Cook et al. (1999) provide a useful review of service typologies based on marketing and service operations criteria. They find that, even though these typologies are mindful of the customer and the process aspect of services (Lovelock 1980; Chase and Tansik 1981; Silpakit and Fisk 1985; Mersha 1990; Wemmerlov 1990), the authors of the survey generally make the criticism that most of them focus on the final service or value-in-use and fail to integrate processes surrounding marketing and operations in any way. Apart from the critique by Cooke et al. (1999), Vargo and Lusch's (Vargo and Lusch 2004) synthesis of developments in services theory also shows that many of the differentiations claimed to be unique to services and used as bases for typologies no longer apply or were erroneous. This challenges researchers to develop novel approaches to service stratifications.

The second main track on which the focus is set can be characterised by its strong affinities to economics. In what follows, three models will therefore receive a closer look: a typology of governance mechanisms, a typology of customer integration processes and a typology of process cost accounting.

8.1.2.1.1 A typology of governance mechanisms

The first model to be examined offers a "typology of governance mechanisms for service organizations exchange" (Bowen and Jones 1986, p. 434)[120]. This typology is based on two dimensions, namely performance ambiguity and goal incongruence as the two main sources for transaction costs in service situations. Performance ambiguity occurs when one party's evaluation of the service performance is impeded by any dimension within the service transaction. This can be due to complex service exchange situations, the intangibility of services, which involves a higher risk, and the dominance of experience qualities. Often, customization and less standardization as compared to product manufacturing also cause performance ambiguity. With higher performance ambiguity, it becomes more difficult to negotiate, to monitor and to enforce exchanges between the organization and the customer, which in turn requires a more complex governance mechanism. Goal incongruence, as the second dimension, occurs when one of the parties is motivated to act in their own interest at the other party's expense because higher profits are expected from competitive than from cooperative behavior. Reasons for competitive behavior are different and incompatible motives or goals as well as opportunistic behavior. Most of all, goal incongruence occurs with unequal information on both sides, with a varying degree of market competition and dependency of both parties, and with infrequent transactions implying unique exchange situations and no intention or prospect of a long-term business relationship. That means exchange in such situations is impersonal and/or anonymous. Since the two dimensions described make it difficult and highly expensive to establish agreements, transaction costs increase. The combination of both dimensions leads to four main categories of service exchange (see Figure 8-1).

[120] For a more thorough concept and analysis of governance mechanisms, see also Ghosh and John (1999).

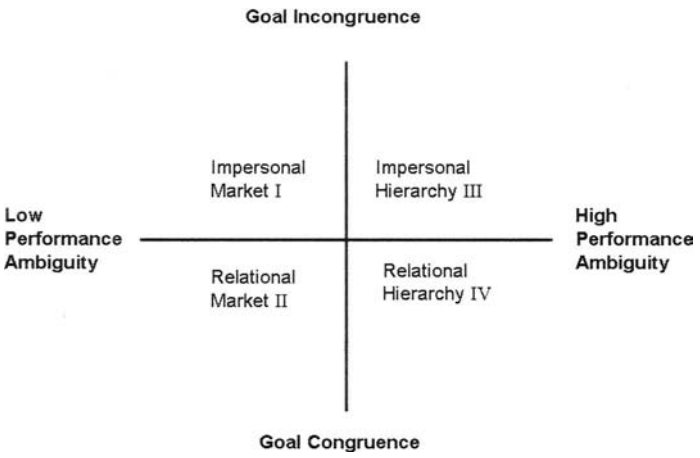


Figure 8-1: A typology of governance mechanisms for service organizations exchange (source: (Bowen and Jones 1986)

Low performance ambiguity and goal incongruence mostly involve standardized service with higher tangibility. Customer participation has to be limited because, with low performance ambiguity, negotiating costs can efficiently be handled by the price mechanism alone. Also, given goal incongruence the monitoring and enforcement costs associated with high customer participation would be enormous. Efficiency here is realized through an impersonal market, that is, external governance mechanisms. Service transactions are governed outside the organization's boundaries in order to control input uncertainty and ensure a low level of transaction costs. Customer participation should only be increased if it does not increase interdependencies and thus inflate transaction costs. Since low performance ambiguity relates to a higher degree of tangible elements, the information costs arising from evaluation are low. This is why higher customer loyalty develops as a result of the price paid for the service rather than the quality of the relationship between client and service provider.

The second category of this model comprises low performance ambiguity and goal congruence. With low transaction costs, service providers may compromise mere efficiency goals, e.g. low costs and routinized production, in order to increase effectiveness, as in enhanced customer responsiveness or improved quality. Given a relational market, the increased costs due to bureaucratization from customer participation will be accepted in order

to maintain and improve customer-organizational exchange in the long term. Due to goal congruence, the bureaucratic costs are not enormously high. In this category, customer participation should be increased and service offers can be customized because it may result in profits on both sides (see also Mills and Morris 1986).

The model's third category relates to high performance ambiguity and goal incongruence. It implies an impersonal or enforced hierarchy and the highest transaction costs among all categories. Here, transaction costs can only be reduced through mediation with the customer by setting up rules rather than negotiating prices. In most cases, the firm would be able to unilaterally structure the exchange relationship. Situations for customers to impose agreements on organizations are quite rare. Transaction costs are reduced through imposed rules that must be accepted in spite of the goal incongruence in the situation. The service provider company takes the customer up within its boundaries in order to reduce input uncertainty.

Finally, high performance ambiguity and goal congruence typify the fourth category in the model. It is characterized by the high intangibility and complexity of the service. In order to reduce input uncertainty, customer participation needs to be enhanced. Internal hierarchical mechanisms can be used to arbitrate the high negotiating, monitoring, and enforcement costs associated with performance ambiguity. Several forms of customer-provider agreements are possible to mediate performance ambiguity and to benefit from goal congruence: the customer can be included within the boundaries of the organization, i.e. giving the customer access to the activities of organizational employees. This way, the customer can play a central role as co-producer, but customer behavior must be closely monitored to ensure the quality of the service outcome. In order to promote the development of enduring interpersonal relationships in which both parties can handle the inherent performance ambiguity of the exchange, an internal hierarchical mechanism is used. Customer participation offers the service provider the chance to monitor customer behavior. On the other hand, the customer also benefits from participation. It allows personal long-term relationships that are crucial to monitor and evaluate experience and credence qualities of highly intangible services and therefore helps to reduce performance ambiguity.

The critique of this model mainly targets the applied dimensions because they do not seem to be robust enough. Performance ambiguity may again be related to levels of intangibility and

is therefore subject to the criticism cited previously (Vargo and Lusch 2004). As to the dimension of goal incongruence, it is not convincing as its general thrust can be classified by the inherent character of opportunism. Even though goal incongruence is part and parcel of service processes, this dimension does not determine a party's behavior (Bowen and Jones 1986). Regarding the actor, goal incongruence is merely part of the assumption of 'bounded rationality' but it does not fully characterize the service type.

8.1.2.1.2 A typology of customer integration processes

The second model under discussion offers a typology of four types of customer integration processes (Fließ 1996). For that purpose, the degree of process apparentness is attributed to the respective market actor, i.e. the provider and/or the customer (Figure 8-2).

degree of process apparentness on the customer's side / degree of process apparentness on the provider's side	low	high
low	„trial & error"	customer-dominated process
high	provider-dominated process	optimal co-production

Figure 8-2: Types of customer integration processes (source: (Fließ 1996)

If process apparentness is high on the customer's side and low on the provider's side, the process is dominated by the customer. The advantage in knowledge enables the customer to decide on contributions and the course of the process as well as the co-performance. Very high information asymmetry even facilitates the coordination of the provider's contribution from the customer's side. Fließ (2001) exemplifies this type of integration process with the help of supply-management driven industries like automobile production. In contrast, a provider-dominated process is characterized by a high degree of process apparentness on the provider's side and a low one on the customer's side. This type primarily leads to difficulties -

to be precise, uncertainties - with regard to the interaction between both parties. Such problems originating in the sphere of interaction are then likely to transmit to all other activity levels within the entire transaction process.

Another type features low process apparentness on both sides. This type includes customized development projects dealing with entirely novel solutions in which both parties have interests in common. Even when both parties are aware of the necessary process integration, due to the project's high level of novelty, integration can prove to be not transparent enough, e.g. developing an equipment accessory for the latest car model. This type of process can be described as "trial and error". Uncertainties here are caused by the provider's as well as by the customer's behavior; these uncertainties tend to be even worse if collaboration is taking place for the very first time. On the other hand, optimal co-production and process integration accompanies a high level of process apparentness on both sides. Not only are both parties aware of the importance of coordinating process contributions, but the course of the process is also revealed as relatively transparent to them. Due to strong cooperation between both parties, this type of integration process features only minor problems in terms of interaction interfaces. Typically, such cooperation occurs in long-term business relationships where both parties are familiar with their counterpart's behavior. In addition, both sides are experienced in a similar process, so they have established certain patterns of customer integration.

For the purpose of this thesis, the model is insufficient in the following areas: low process apparentness is given as a deficit in the transaction process but the model does not explore this aspect any further. Indeed, it is claimed that all types of processes can be effective if there is a mutual consensus concerning the process contributions (Fließ 2001), i.e. the structure and the course of the process procedure. However, the model does not discuss any possibilities for such a consensus to be achieved. Any further consequences and explanations regarding the customer process therefore prove to be inadequate.

8.1.2.1.3 A typology of process cost accounting

Pursuing the line of thought of the preceding model somewhat further, Salman (2004) delivers the third model to be examined. He differentiates various types of applying different process cost procedures. Based on two dimensions, which are the degree of repetition of the process

and the level of anticipated activities within the process, four categories are suggested (Figure 8-3).

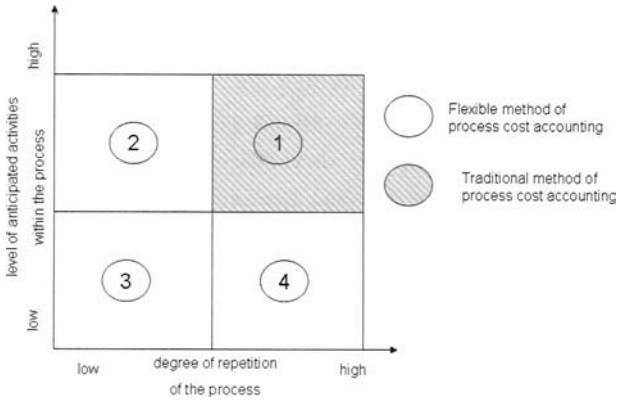


Figure 8-3: Applying methods of process cost accounting (source: Salman 2004)

One category involves a high degree of repetition and a high level of anticipated activities. Typically affecting commodity transactions, processes here are mainly standardized so that the traditional method of process cost accounting can be employed. In contrast, a low degree of repetition and a high level of anticipated activities often concerns project transactions because they feature uniqueness and a high level of integration and complexity. Thus, while mostly requiring anticipated learning processes, a flexible method of process cost accounting has to be used. Another category implies a low degree of repetition and a low level of anticipated activities. This case predominantly occurs in project transactions where learning processes that are not expected or planned take place. Here, a flexible method of process cost accounting has to be applied, too. The last category relates to a high degree of repetition and a low level of anticipated activities. This is the case in customer integration transactions but also in commodity transactions with learning processes that are unplanned but which constantly recur in single transactions. As before, a flexible method of process cost accounting is used.

Transferring the idea of the model to the service blueprinting concept entails the following: activities below the line of order penetration, i.e. potential activities, belong to the first process type. With increasing process integration, the level of anticipated activities tends to be reduced because customer integration results in higher uncertainty. That is, primary process

activities are likely to require flexible process accounting. Thus, even if the model can be credited with linking up with the service blueprint approach, the overall deficit is that it is too general and focuses on process costs only but does not reflect on transaction costs within the process.

In summary, the models presented here as relevant regarding customer involvement and transaction costs have been found to be deficient. They either do not concern service classifications from a customer-focused perspective and therefore exclude major relevant service characteristics or they leave out the economic link between the two process units of service provider and customer, because they are considered separately.

8.1.2.2 Identification of sub-dimensions for the development of a new integrated service typology

Based on the findings from existing models, it is proposed to develop a new service typology which takes the identified relevance of customer service scripts into account and pays heed to transaction cost theory (Williamson 1975; Coase 1988; Fließ 2001). Its purpose is to classify service situations with regard to the need and level of difficulty of customer scripts and to identify implications for transaction costs in terms of focal aspects of the service process (e.g. creating scripts but not advertising).

In order to develop a service typology for the purpose of this research, two major dimensions shall be considered as dominant - script necessity and script learnability - because they form the basis of a range of sub-dimensions. That is, all service situations can be treated according to the relevance and necessity of the customer's script on the one hand and, on the other hand, the difficulty of learning (from the customer's perspective) or teaching (from the provider's perspective) the service script. As a consequence, transaction costs as well as the respective governance mechanism in a service situation are considered to be the resulting dimensions in such a service typology. Based on the discussions above, the following sub-dimensions can be identified and are needed to complete and improve the typology:

- Degree of repetition of process activities (Salman 2004): the degree of repetition affects the learnability of the service script. If the customer is required to perform one

process activity several times throughout the course of the service, it will imply learning effects and result in a service process which is easier to learn overall.

- Task similarity: task similarity is based on the perspective of divided attention theory and dual-task performance. The task similarity affects the level of processing capacity as well as the structural interference between tasks and it can often be improved by learning (Allport, Antonis et al. 1972; Kahneman 1973). Here, also, the learnability of the script is affected.
- Level of activities to be planned and foreseen/expected ("plannability") (Salman 2004): with a higher level of expected and foreseen activities within the service process, the script becomes easier to learn.
- Process apparentness (Fließ 1996; Fließ 2001): since the customer is only capable of learning if he/she knows what to learn, this sub-dimension highly influences the learnability of the service script.
- Customer participation (Chase 1978; Mills and Margulies 1980; Silpakit and Fisk 1985; Bowen 1990): the level of customer participation within the service process, relating to an active role for the customer, directly reflects the necessity of a customer script because the customer is in fact called on to deliver input. At the same time, it generally involves the degree of interaction within the service process.
- Customer integration (Mersha 1990; Fließ 2001): the level of customer integration includes customer resources and other factors and does not necessarily involve the customer per se as an active participant. Customer integration, too, can be considered as a sub-dimension of script necessity.
- Level of service (in-)tangibility (e.g. Shostack 1977; e.g. Bowen and Jones 1986): for the customer, the level of (in-)tangibility – with reference to search, credence, experience qualities – has an effect on the necessity of a service script.
- Standardization (Maister and Lovelock 1982; Dilworth 1983): depending on the degree of standardization of a service, script necessity also, but mostly script learnability, is affected.
- Service complexity (Shostack 1987): this theme represents a sub-dimension to both script necessity and script learnability. First, if the service process is complex, there is more need for customers to develop a script because otherwise they get lost within the process. Second, if the service is more complex, it is more difficult for customers to learn their script.

With the theoretic background given in the first part of the thesis, it is much easier to reconstruct the train of thought that the service typology is based on. By breaking down the concept of scripts meticulously and subordinating it into the context of learning but also customer integration, it becomes even more evident why such a categorization of services in accordance with customer scripts is significant: such a classification not only refers to the course of action in the service production in terms of process efficiency, it also offers routes to improve customer integration by applying the script concept, and it even reflects the idea that customer scripts benefit the outcome of the service. Here as well, all three parts, i.e. the supplier side of the process, the customer side of the process and the transaction cost theoretic perspective as the link of interaction and coordination, are needed to determine different service categories and to offer a pattern of orientation in order to optimize the transaction cost situation for all service types.

8.1.2.3 A new integrated service typology

Founded on the preceding arguments, the following service typology has been developed (Figure 8-4). Although the above listed sub-dimensions represent an essential component of the diagram, they are not explicitly shown, in order to keep the diagram clear and manageable. Above all, this model points out how transaction costs can be reduced within the various service types. Benefiting from the summation of the other models, the new integrated service typology offers a comprehensive framework for the classification of services with a focus on the B2B-sector. By allowing for the customer process in form of customer service scripts, the model suggests possibilities of improving customer integration and minimizing service transaction costs. According to the proposed typology model, services can be categorized on the basis of two key dimensions, namely script necessity and script learnability. Those dimensions seem to be useful because they comprise the sub-dimensions outlined above. Therefore, they not only include major service characteristics but also offer service classifications from a customer-focused perspective while presenting information on transaction cost management.

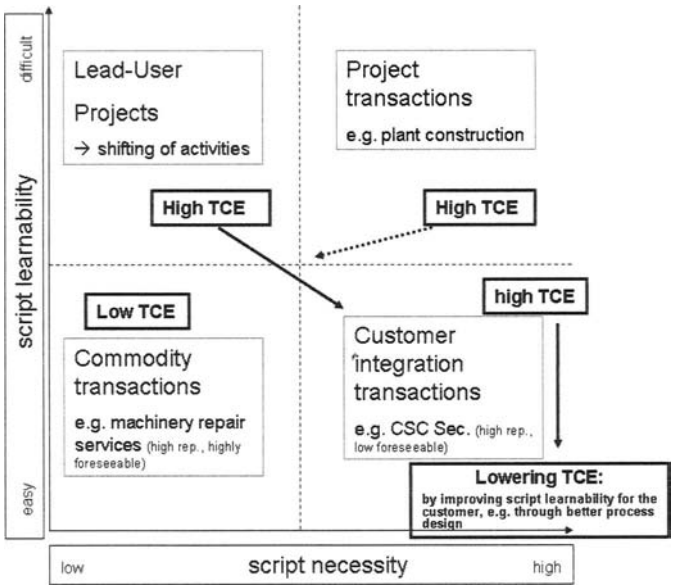


Figure 8-4: An integrated service typology for the analysis of transaction costs in various service exchange situations

In the first category, which features low script necessity and difficult scripts, transaction costs are high because both parties try to navigate through the process with no precise process image. This can be the case in so-called lead-user projects – exemplary for business-to-business (B2B) environments – where dynamic exploration of the process procedure as well as the outcome is more important in order to develop a firm process procedure. Given that both sides collaborate as equal partners, customer integration is at a high, which, at the same time, involves major coordination. Also, transaction costs – precisely due to external but also due to internal coordination – are still high but can be reduced by transferring this type of service into a more common customer-integration service. In the latter, we have higher script necessity but process scripts are easier to learn. Relating this to the practice of process blueprint (Shostack 1992), it means that activities have to be shifted from the levels of process activities to the level of potential activities. Thus, they become subject to a certain degree of ex ante standardisation. Another example of this category in a business-to-consumer (B2C) setting would be interactive theatre where the audience interacts with the artists. In this case, the spontaneity and impulsiveness of the situation adds to the performance quality. But even in such a situation the theatre, as the service operator, benefits from customers who are

familiar with the basic process structure and know that they are expected to interrelate at all. It highlights that a certain amount of standardisation helps to decrease transaction costs and improves chances for succeeding in the performance which ensures that customers actually get what they want.

The second category refers to services with high script necessity and difficult scripts which can be the case in project transaction. These may involve plant construction, exemplifying a B2B environment, but also wedding planners or training space tourists as cases for B2C settings. Since this category often concerns a rare or first-time collaboration and a very complex service process, the script is difficult to learn for the customer, yet it is very important for the successful course of action. Transaction costs are possibly high due to the need for external coordination, i.e. coordination and arrangements with the customer rather than internal synchronization and can be minimized by the attempt to standardize the service and to reduce script necessity at the same time.

Highly standardized services such as commodity transactions represent the third category. For instance, machinery repair or dry-cleaning services make it easy for the customer to co-produce. The customer is not required to have anything else but a short and easy, yet strong script because the majority of activities as well as the most crucial activities are carried out by the service provider. In this service category, transaction costs are fairly low given that there is not much coordination involved.

Finally, the last category concerns services which strongly rely on a customer script but, at the same time, the script is easy to learn for the customer. An example for such a category is the service being researched in the empirical study; also, the use of an ATM cash-machine could also be considered. If transaction costs turn out to be still too high, they can be reduced by improving script learnability for the customer. As the empirical study is going to show, this can be realized through better process design, for instance because it helps the service provider to teach the script to the customer. Conceivable measures, when referring to the case of the ATM, could be the improvement of signs outside the cash machine or sending out instruction booklets to all customers. In general, advancing the skill of process design is a useful investment because it helps the service provider to equip the customer with a better script knowledge.

Like every typology, its single categories merely represent ideals; yet in reality, categorical boundaries are often blurred so that diverse services could be classified as two merging categories. For instance, the facility management service of Gegenbauer Bosse (as described in chapter 6) that was examined in the context of expert interviews illustrates such a case. It exemplifies features of easy script-learnability and a medium-level script necessity and would therefore range between the last two categories described above. Given that customer scripts are of relevance for a business-to-consumer as well as for a business-to-business environment, this typology is applicable to both settings. Services such as tailoring or a launderette as well as wedding planners and cash machines, travel agents or hair dressers could be feasible B2C-examples.

Based on such a typology, transaction cost stages can first be identified; then, key directions are offered at which a service type should be aiming in order to improve the momentary transaction cost situation. Pursuing this line of argument, a checklist for service providers could be developed which includes all sub-dimensions of the typology and assists service companies in classifying themselves as a certain type. Depending on which service type they are categorized as, they may use the typology chart as a pattern of orientation for a future business direction with the objective of optimizing their transaction cost situation. Appropriate transaction cost reducing measures could be taken and the service process could be modified accordingly. In this sense, the typology could function as a decision-aid on when to create unique service process interactions and scripts and when not to do so, to tie the customer to 'the way of the company'.

8.1.3 Implications for service engineering (models)

In essence, the thesis research was framed by the idea of creating a novel service engineering model. Since customer processes are insufficiently taken into account in conventional service engineering models such as the service blueprint, it was proposed to elaborate an appropriate structure to reproduce the customer process in a service transaction. In this sense, the script offered a suitable construct: it forms a process structure which could easily be reflected as the blueprint counterpart and adjusted to comply with the rest of the blueprint structure. As the various activity levels can be differentiated within the internal processes of the service provider, the same differentiation can be found in the customer company. Here also, the line of interaction configures the interface to the supplier's side and the customer's onstage

activities can be identified by the service provider. Equally, there are then backstage as well as support activities that are carried out in the customer company; these are neither perceptible nor accessible for the service provider. In order to co-perform the service transaction, the customer also needs to carry out preparation and facility activities which form the foundation of the customer process. Hence, the traditional service blueprint is extended by the additional dimensions of the customer side.

When designing the service process by means of a blueprint chart, for instance, the service provider can include the customer process from the very beginning. Even though it will be impossible to record the customer side completely, the extended blueprint version offers a basic framework to define the key activities on the customer side. The rest of the customer process can merely be assumed. However, the reason for the integration of the customer process into the service blueprint is a more comprehensive and therefore a more realistic view on the service transaction process. A service process cannot be designed by leaving out of account an essential part of the process . The integration of the customer script into the service process gives the service provider a crucial USP because it helps to engage the two process sides with each other: the provider who succeeds in aligning the internal processes optimally to the client's ones is selected because the client favours the supplier who facilitates participation and co-production best. By trying to match the process design closest to the customer script, the service provider makes it easiest for the customer to co-perform during the service transaction.

In order to model the process accordingly so that it facilitates the client's script development, the service provider can refer to the process design criteria that have been identified as influencing the customer script. In this context, it might be worth applying checklists by means of which the entire process including all process activities can be tested with regard to their 'script-aptness'. Taking this idea a step further, a heuristic for process design could be thought of as an option: each process step would then have to be checked or reassessed for meeting all process design requirements. Codes, such as 0 and 1, could then be attributed to every activity and in the end, totalling it up, the final amount could be divided by the number of activities, for instance. If the service company commits itself to achieving a minimum figure for evaluating the process, the result needs to be at least a certain figure for the process design to meet the conditions; otherwise it would need to be re-designed. The implementation of such checklists or even heuristics as a definite component of service process models such

as the blueprint might be worth further elaboration. Allowing for the idea of customer integration right from the start when the process is designed could lead to advanced service engineering and benefit the overall service transaction regarding interaction and coordination within the service co-production process.

8.1.4 Implications for service innovation and export

In order to succeed in customer-centered service solutions, it is not only the service production but also the development, the innovation and the export of services that require customer integration. Since service innovations always imply process innovations[121], the question arises of how these processes determining a service transaction can be designed. Therefore, service development aims to focus on the customer and necessarily on the customer processes. The interaction process between customer and provider and the resulting customer integration represent the core of the service transaction. For that reason, the service provider needs to pay greater attention to the customer process and, hence, to the customer script which forms the basic structure in interaction processes. The service provider needs to find out how script use may be valuable for innovation opportunities. Basically, the same applies to service exports.

Given that the target group and the target market may differ from the original one where the service is already established, export can be considered as a form of innovation where certain service aspects must be adapted or innovated according to possible cultural and/or regional aspects. Overall, the key assumption is that there is some kind of base model of the customer process represented as the customer script. Because it consists of single activities being configured and linked to each other in a pre-set structure, activities can be transferred and the primary or base structure may be altered. Aiming at exporting a service, features of some activities may be subject to cultural aspects whereas other activities may be static and unchangeable. Thus, extant service processes comprise key activities on the one hand, which define the rough process structure and determine the basic idea of the service solution. On the other hand, there are other activities and process sections that are interchangeable or modifiable and which can be replaced by diverse activities or process sections without losing or affecting the essential core of the service concept. This latter type of activities may easily

[121] The success of service innovation and the relevant success factors may vary depending on the industry (as an example for an industry-specific study on success factors of service innovation, see e.g. Gnoth and Ottenbacher 2005).

be influenced, for example through the cultural background of a particular export destination. By and large, the extended service blueprint as a service engineering model which includes the customer process side can be thought of as a basic framework (see Figure 8-5). This framework can then be used to implement changes such as shifting or altering activities when innovating or exporting the service solution.

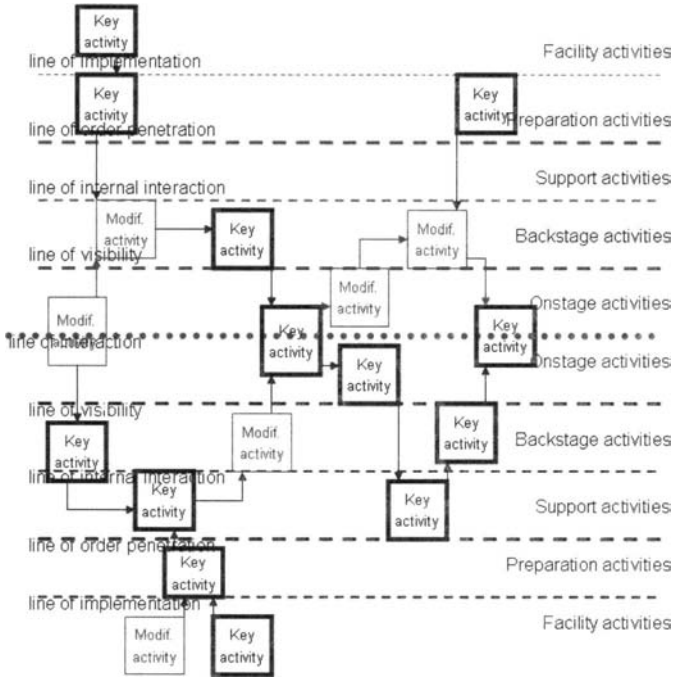


Figure 8-5: Adjustable framework for service export

There are two major options for service providers to design services on the basis of customer scripts. First, in the context of modifying or exporting existing services and innovating novel service solutions, service providers may adjust their own processes to the customers' script. Second, the service operator may try to control the customer process by steering or even manipulating parts of the customer script (Frauendorf 2004).

8.1.4.1 Script-based design of the provider's process

If service providers intend to design their own processes according to the customer script when developing a service solution, they need to analyze customer scripts beforehand. Yet, given that a more or less unconscious and implicit form of customer knowledge is concerned, service operators face the problem of grasping those scripts. Therefore, they need to proceed differently, for instance through modeling customer scripts by means of simulation methods. For that purpose, mental models can serve as a helpful tool: on the basis of mental models, one can ascertain if definite characteristics regarding service objects or the course of events are linked to a definite service procedure. Then, assumptions can be made regarding the extent to which these characteristics may have already been established in the customer's process image. Based on that, it can be considered whether those characteristics can be applied to similar processes.

As a next step, the service provider could segment actual and potential customers according to key script differences and create corresponding service solutions. This way, the service provider may design essentially standardized services that the customer is able to comprehend by way of general scripts. The use of scripts is particularly profitable for extremely standardized services. Once the customer script is grasped, the service process can be designed so that customers can easily navigate through the service process and know where, what and when to contribute to the service production. The service process may also be structured with a low share of customer participation in order to limit the uncertainty factor caused by the integration of the customer as an external factor. Yet, there needs to be enough flexibility in the service design to take differences in customer scripts sufficiently into account.

When introducing major service innovations or exporting services into another region for which the service represents a drastically new concept, customers will not yet have developed an appropriate script. Instead, the service operator may attempt to conceptualize a service that offers customers the chance to follow familiar scripts so that they only need to develop a partially new script or to adapt an existing one. This way, the service operator can profit from the script function of developing analogies and standards (see section 4.4.4). The service of a self-catering restaurant on a motorway service area, for example, follows the process structure of supermarkets applied to restaurant services (Noteboom 1999). This facilitates innovations through the simple transfer of a service concept to other service areas such as applying the

concept of an online-bookstore to the toy business or pharmaceutical industries. Furthermore, service innovations can be developed through the combination of various existing services, as given in the example of the self-catering restaurant above. In order to conceptualize new service processes, service operators must find out which service concepts from other business fields are using similar process structures. Or, in the context of service export, there may be service processes in the destination region offering hints about existing process structures which can be used as starting points. Based on that, service operators can design a new service solution or export their service concept to a different destination by using the existing process structures and fill process activities with different content and object features. Hence, it makes it easier for the customer to apply the requested actions within the co-performance of the novel service process.

When designing a service process it is crucial that the service provider fulfils the conditions for script development. A script calls for a script-activating event; besides, the customer needs to see that the action situation and action script are congruent (Abelson 1981). Also, when designing the process, the service operator needs to acknowledge that the process design must be consistent in itself and the course of events needs to show robustness (Mandl, Friedrich et al. 1988). For that purpose, the service provider needs to design the service process in such a way that the customer receives precise instructions about the actions that the customer has to perform for the service process to progress.

Developing a service requires that the service operator's own script must show sufficient similarity to the customer script that the two scripts optimally comply with each other (Corsten 1997). In this context, the service provider's script can be defined from several perspectives. From a small-scale perspective, the script relates to the respective customer contact employee in the supplier company; hence, it represents an individual script in accordance with the service operator's expectation structure. From a large-scale angle, this individual script may be simply understood as part of a superordinate organizational script; thus, it forms the basis of the organizational culture and the process organization of the course of events (Noteboom 1999). Here, the coordination and steering function of scripts represents a challenge because the provider script has to be adjusted to the customer script. Yet at the same time, this function may turn out to be very useful: sufficient similarity between customer script and provider script, i.e. an adjustment of the latter to the former, ensures

smooth progress of the service process. In this way, carrying out the process activities is subject to a mutual and thus very efficient routine (Corsten 1997; Noteboom 1999).

8.1.4.2 Influence on the customer script

In the context of controlling the customer, the service operator may attempt to affect the customer's script. For that purpose, the script functions described in section 4.4.4 offer useful clues. Since customer scripts establish themselves with an increasing amount of experienced service interactions, the service provider should try to affect the script preferably in an early stage of development. Service scripts are learned by customers, which enables the operator to provide the customer with the necessary "learning material" (Gouthier 2003). For example, adequate tools of orientation, such as signposts or instructional information from service employees, may favour script development. For the service operator, they also facilitate a steering influence. If the instructions are precise enough, they entail not only an efficient service process but also an effective service outcome that fulfils quality requirements and customer wants. The customer then knows where, when and what contribution is required during the service transaction process. In this way, the service operator induces the customer to deliver the necessary contributions, such as information or other resources, in order to progress the service smoothly. Depending on the level of service complexity and standardization, information brochures or films can be utilized, provided by the service operator with the first use of the service (Bowen 1986; Corsten 1997).

A combination of various sources of information for different sections of the service process could be conceivable, too. Here, airline companies offer a paradigm for controlling the customer: on the one hand, the passenger is briefed through the flight attendants, on the other hand, safety instructions are communicated through an introductory film. Irrespective of the service provider, the objective of a mainly standardized service implies that the client is able to comprehend it through a "general" script. Within this script, a range of "tracks" can evolve, such as scripts for flight services in different booking categories. Airline companies who intend to offer a modified service, for example in terms of a reduced service scope, may profit from the customers' existing flight service scripts. It is important that the client is provided with the kind of sources of information that are based on already existing customer scripts. For instance, if it is explained to the passenger that beverages are not automatically served several minutes after the take-off but can be purchased from the flight attendants, customers

may adapt their scripts to the newly designed service. That is, the customer script is slightly modified and forms the foundation for a new script standard.

Particularly in the case of very novel services the customer script is not yet established. Hence, there is a greater scope for developing the script structure and evolving different script tracks. In this context, the service operator may benefit from the script function of analogies and refer the client explicitly to other services, which, for instance, feature the same process structure but a different service objective. Also, the service operator may copy tools of information and orientation from competitors and employ them for similar purposes. For example, the allocation of numbered tickets in waiting areas is used in a range of service processes. The tendency of scripts to form analogies to already familiar scripts enables the service operator to guide the customer script. Guiding and controlling the customer must be directed towards the target structure of the service outcome (Nerdinger 1994). Therefore in the attempt to influence the customer script, service providers face two aspects: first, they need to form, to modify or to extend the customer script. Second, the motivation and the objective due to which the client wants to take up this particular service have to be taken into account. It is because of that objective that the script acts as a steering instrument for the customer (Gioia and Poole 1984).

8.2 Implications for future action in practice

Since the research was conducted in cooperation with a company, it was important to derive practical implications for future action based on the triangulated data results. Those recommendations were given to the company hosting the study; subsequently, they were categorized with regard to their degree of difficulty as well as their achievement effect when implemented. Yet, at least partially, they can also be thought of as general implications for practice when considered from a somewhat broader perspective.

The descriptive statistical results of the survey revealed that the majority of clients had not concerned themselves with any of the information material. To a great extent they felt they had not been sufficiently informed about the service process beforehand. In addition, customer satisfaction regarding the information material was given the worst grade of all satisfaction items. Those results highlight the fact that the documents and the information material, which are handed out to the customer when purchasing the service product, appear

to be very bare, dry and unattractive. Although clients receive a description of the service product within the tender, i.e. before the actual purchase decision is made, nothing tangible is put at their disposal when they ultimately purchase the intangible service product. Here, the deficit is shown precisely in the compensation of service intangibility through physical or illustrating surrogates which is extremely important in the service business. Given the problem of intangibility, which ignores the service aspect, and the unattractive design of existing material, the creation of a "welcome package" for customers is recommended. This would enhance the feature of customer integration, partnership and trust-based relationship within the service process. By directly addressing the client and using buzz words, the welcome package should point out what the customer needs, why this is important, and what the service provider offers to solve the problem.

In addition to the problems of intangibility listed above, the results of the data analysis also showed deficits regarding the customer's process image and the perceived process transparency. For that reason, it is recommended to invite customers to the service provider's company, i.e. 'on the spot', and perhaps even to offer customer workshops. Up till now, customer invitations were merely done in exceptional cases; yet, they were always judged as very positive from the customer side. The idea behind customer invitations is to offer them the chance to obtain a clearer image of the service providing company. This way, they can experience the manpower, that is, the 'who and what' that is performing the service. The customer is then able to ask questions about the process, which increases process apparentness – for both sides – and helps to realize process alignment. According to the sales department (source: endnote personal communication Hr. Flämmich), customers often appreciate insights into the company processes.

In this context, customer workshops or training sessions can not only favour the matters discussed so far, but they also take the aspect of customer development into account. So far, the focus in the company has been set rather on canvassing new customers and keeping existing ones. In particular, this has become clear through expert discussions. Additional comments made by customers during the survey revealed that they do not feel they are automatically informed about new products, technical novelties and more innovative solutions that are available. Hence, pursuing the idea of customer development and customer communication, not only would workshops be useful but it is generally recommended to show more pro-activity towards clients. Novel offerings and innovative service solutions could be

communicated in a better way to customers, which means emphatically, regularly and perhaps even in terms of advertising brochures or mailings.

Survey questions on the perceived process design revealed that the criterion "feed-forward" was assessed with the worst grade. At the same time, deficits became obvious regarding process visibility and customers' partial dissatisfaction with status notifications. Usually, clients cannot access eTTS; instead, they receive ticket notifications via e-mail or telephone. But the mere information that the service is in process does not satisfy the customer because it does not expose any concrete process progress. Therefore, setting-up a customer tracking system is suggested. It would allow clients a web-based access to the actual status of the service operation. Various process steps could be defined in generalized terms which would indicate the service performance progress to the customer. Alternatively, a simple percentage status display could be used in the tracking system to indicate the progress from 0% to 100%. This would enable clients to recognize the actual progress of the service performance. Hence, customers would feel well informed as well as integrated into the process. They would have the chance to track the process phase of their service order which also corresponds to the required criteria of process design.

The process record of the service blueprint as well as the survey results regarding customer satisfaction with end notifications lead us to assume that an end notification as a complete check-up of the total system is not carried out on a standardized basis. In this context, gaining the client's confidence represents a crucial issue: with the assurance that a complete check-up has been done and the entire system is working, the trust-based relationship to the client would be enormously strengthened. This way, the customer would be able to recognize and to assess the reliability of the system; also, this feature would benefit the perceived reliability of the employee and the provider 'behind the service'. Alternatively, a joint check-up might be conceivable that could integrate the customer directly into the check-up process, i.e. the client would have an immediate feed-back that the system works properly. This would comply with the process design criteria of feed-back and controllability, too. In sum, a standardized end-notification of the customer about a successful check-up of the complete system is assumed to result in considerable quality improvement.

Expert interview results as well as the service blueprint record have shown discrepancies in terms of internal interfaces. In transferring customers from the plan-/build-phase to the run-

phase, there is a loss of customer information and customer data taking place. Ideally, a handing-over protocol should be drawn up when transferring the customer to the service operation. Yet very often, many matters are merely arranged verbally and the customer is simply handed over to another unit. The introduction of checklists as a standard would therefore be very valuable. Such checklists, for instance, would need to clarify what has been done at the customer company so far, which arrangements have been met and what particularities characterize the customer company. It would be very important to update and revise the data on a regular basis. Introducing a standardized and extensive customer data base system including checklists and handing-over protocols would help to improve interface coordination and avoid process disruptions.

9 Conclusion

The thesis concludes with a review of the line of argument and the research study conducted. This final chapter is therefore divided into three subsections: first, an overall summary is provided, giving a résumé of the major results of the research and the key statements that the thesis has produced. In the next section, the author refers to the limitations of the research. And finally, the third section serves to encourage further research, which may partly be seen as a logical extension of the limitation section but also as a general stimulus for promoting and expanding the research discipline.

9.1 Summary

The starting-point of this thesis was the motive of taking the customer process in a service transaction appropriately into account. For that reason, an equivalent structure had to be identified that would represent the customer process in the same way as a service blueprint represents the internal activities of the service provider's process. This could be found in the concept of a customer service script. In the context of this thesis, the idea was to comprehend a service transaction as a process entirety instead of merely considering the internal process of the service operator and essentially ignoring the client side. A way had to be found to align and harmonize those two 'separate' process parts, i.e. customer and provider, with each other and to integrate the customer process accordingly into the service process as a whole.

In the first part of the thesis, dealing with the theoretical basics that were necessary to understand the research area, several service aspects were scrutinized regarding their contribution to the 'engineering' of a service. The investigation of the field of service engineering revealed that even though it combines approaches of various research streams, its models lack an adequate and integrative comprehension of the customer process. One model, namely the service blueprint, was then examined in particular: its differentiation into distinct activity levels offered great potential for the purpose of the thesis in terms of linking to the customer process side. Furthermore, the service blueprint proved to be rooted in transaction cost theory, a feature which was then used to advance the theoretical framework. Transaction cost theory turned out to be the appropriate theoretical foundation relating both process sides to each other, i.e. creating a link between the service provider's and the customer's process. Hence, the theory was explored further with special regard to transaction costs within the blueprint and service scripts as crucial elements of transaction cost theory. From there on, the

theory then addressed the customer process as such, and identified service scripts and mental models as a form of customer learning that facilitate the client's participation and co-production in a service transaction.

Based on the theoretical background, the second part of the thesis dealt with the empirical issues. Precise research questions as well as a conceptual model were developed which were tested in practice. A company engaged in the implementation and the supervision of business security data networks hosted the research study. In this context, an ex ante process description in the form of a content analysis was done, expert interviews as well as a group discussion interview were conducted and a customer survey was carried out. Thus, the customer process and the consideration of it from the service operator's side were examined from different angles. Therefore, on the one hand, the thesis attempted to find out if and how service providers take customer processes into account in terms of service design, operation and delivery. On the other hand, it was examined whether clients had a consolidated service script and what factors had an impact on it. In this context, the service provider's influence (regarding the service process design) on the customer script was investigated in particular. Moreover, the script influence on the process success in terms of customer satisfaction as well as time efficiency was part of the empirical study.

Due to the content analysis, a detailed service blueprint was produced that included the customer process side and pointed out critical process points which could mostly be found on the customer interface. The key statements of the qualitative expert interviews confirmed the crucial relevance of customer scripts in service transactions as well as the disregard of customer processes from the service provider's side. Major results of the survey can be seen in the fact that the hypothesis dealing with the effect of the service provider's process design on the customer script could be verified. Also, a significant influence of customers' pre-knowledge on their script establishment was found and could therefore confirm another hypothesis. In contrast, the assumption that the customer script has an impact on service process performance could only partly be corroborated with the study: as a result of the data analysis, the customer script was indeed shown to influence customer satisfaction but an impact on process efficiency in terms of process ordering time had to be rejected. Finally, theoretical implications as well as suggestions for improvement on how to transfer the results into business practice were derived from the analysis outcome.

9.2 Limitations of the research

Like all research, this piece of work attempted to be as thorough and as comprehensive in detail as possible; yet, at some point, research always requires that concessions be made as it would otherwise result in an enormous amount of information that no researcher would be able to handle. Scripts, like every other cognitive construct, can never be grasped in full because no model would be sufficient to describe all influencing factors. For that reason, the conceptual model being used in this research does not claim to be complete. The selected influential factors were simply the ones that seemed to be most relevant for the purpose of the research. A number of other influential concepts and moderating factors could be thought of as affecting script variability. These factors would vary with the type of service being considered. Whereas personal, emotional or situational factors, such as the involvement or the mood of the client, would have a higher impact in business-to-consumer services, cultural differences could affect both B2C and B2B services at a high level. Since the model was meant to be applicable to a practice environment and the study had to feasible to some degree, those factors were left out of account. That means that the model would still be extendable, to the extent that the overall model could be tested with structural equation modeling, whereas merely bivariate relationships were examined in the context of this study.

Another point of limitation is the transferability of the model itself. The study was carried out in a very specific service area. Parts of the research measurements such as the questionnaire were particularly suited to the distinct service situation. Also, since a combination of quantitative and qualitative research methods was applied, a limited generalizability of the results must anyway be assumed, as argued in section 6.11.4. Furthermore, the transferability of the model can be questioned because different types of services are subject to different assumptions and conditions. This may also depend on the necessary degree of customer participation as well as customization of the service which the model design has not allowed for in this case.

Given that the customer script is a concept that originates in cognition, the researcher comes across a general difficulty of measurement. Three script dimensions were used to measure the strength of the customer script but results might have turned out differently if methods had been utilized such as pre-set service sequences for the clients to arrange or to classify, a procedure that has been applied by other script researchers (e.g. Pohl, Colonius et al. 1983; Solomon, Surprenant et al. 1985). Another shortcoming in terms of measurement can be seen

in the variable selected for the service performance efficiency. This variable was reduced to efficiency regarding the order processing time and it was gathered from the company's database. Overall, the variable showed a relatively high achievement level. Since pre-determined time-standards had to be at least met for company contract reasons, if not exceeded, the variable did not show a normal distribution. Values and statements regarding this variable including the third hypothesis which had to be rejected due to the analysis values might have resulted in a different outcome if different measures had been applied.

In the context of this thesis, scripts are merely used as surrogate constructs, i.e. they represent an aid measurement to describe and grasp customer processes in service transactions. Since the study was conducted in a business-to-business environment, the concept of a script which is originally defined on an individual basis is transferred to an organizational script of the customer company. For that purpose, the scripts of the employees of the customer company which are involved in service production are aggregated into one single script. Interactions and interdependencies between distinct individual scripts of the customer company employees are therefore ignored. This limitation becomes particularly noticeable when considering the situation of a buying center with B2B-customers. Under these circumstances, scripts could be thought of as networks: individual scripts or script elements might then affect each other and would therefore have an impact on the final structure of the overall script.

9.3 Further research

As the limitations have shown, the research itself suggests further studies to be done taking into account those aspects that were left out in the research under discussion. If the model was extended and included more, or simply a different variety of, influential factors, research could pursue a novel course. Furthermore, the overall model could be tested on the basis of structural equation modeling, given that only bivariate relationships were examined in the context of this thesis. Also, with special regards to business-to-consumer services, research could go more into individual factors and moderators which would lead to a modified conceptual model. This way, emotional, personal and situational factors could be given a stronger focus.

Since the empirical study was carried out in one particular service setting, other service types would offer interesting research topics. On the one hand, studies could be done following the

different service situations suggested in the developed service typology (see section 3.5). That typology may deliver sufficient ideas to test further business-to-business surroundings. On the other hand, research could also be carried out in pure business-to-consumer settings. Another interesting research question might evolve from there, dealing with possible script differences within distinct service settings.

As indicated earlier, business-to-business service situations offer great potential for script interaction. In the case of a buying center, for example, a hypothesis could be set up of how individual scripts influence each other and to what extent this affects group behavior or decision making.

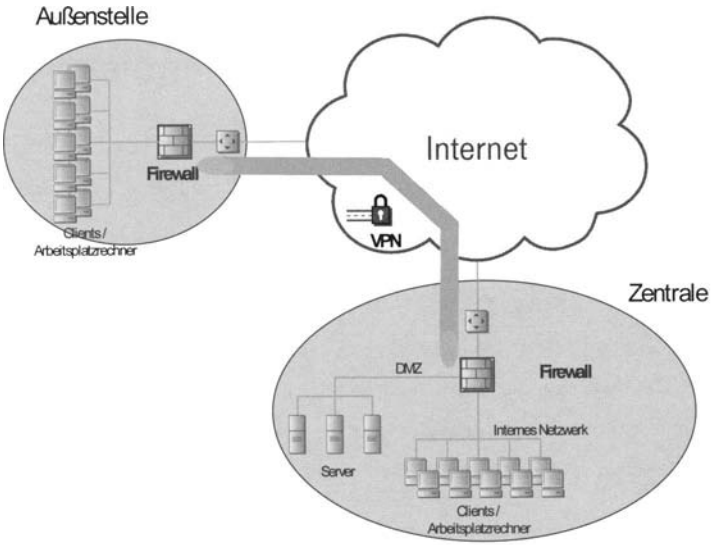
In contrast, cultural aspects would be of crucial importance to both B2B as well as B2C service settings. Here, the cultural effects could be examined with regards to script formation and development. In addition, differences might be explored concerning the extent to which scripts affect service process behavior in dissimilar cultures. Also, script disparities with special regards to varied process design might be looked at. Cultural features might also be of relevance when researching interaction effects and the correspondence between supplier and client script.

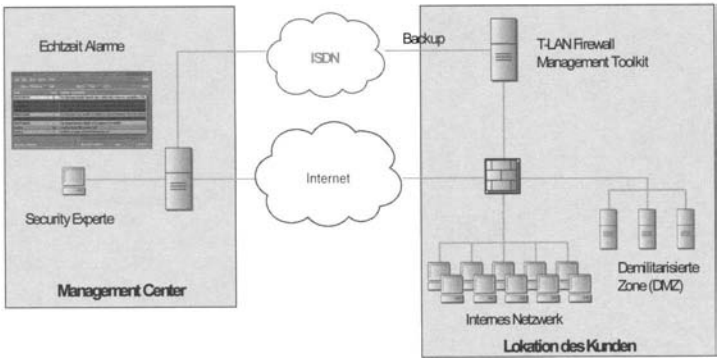
Considering the immediate empirical results, the study could also be taken further and, once the proposed changes would have been implemented in practice, it could be investigated whether those changes have any significant effects on the clients' scripts. In addition, it could be examined whether the changes influence the clients' perception of single process design features or if they have any direct impact on the service performance outcome.

List of Appendices

Appendix 1: Customer Solutions

Check Point is a complete firewall package. It delivers solutions to minimize risk and offer the highest level of protection, while allowing secure access for all of the company's employees, associates, and partners. Watchpack is a firewall systems to protect the customer network with up to 400 IT work stations from internet attacks. Firewalls interconnect the internet access port and the customer LAN as illustrated in the following two figures:





The differentiation can be made into managed and non-managed customers: The former term refers to the supervision, management and pro-active control (depending on the contract agreement) of the customer network, whereas the latter merely involves the provision of the service product.

Appendix 2: List of interviews

- Barbe, Christian. T-Systems, process designer. Telephone interview, August 9, 2005
- Binder, Rolf: CSC Security, team manager. Personal interview, Stuttgart, July 12, 2005
- Brandt, Sebastian: Gegenbauer, head of quality management. Telephone interview, June 8, 2005
- Siebertz, Jörg: T-Systems, core process manager. Telephone Interview, July 15, 2005
- Wenke, Holger: Gegenbauer, Manager Sales Service Center (all branches). Telephone interview, June 9, 2005

Expert discussion („round table"), Stuttgart, June 28, 2005 with

- Binder, Rolf: CSC Security, team manager
- Frei, Bernhard: CSC Security, customer service employee
- Piper, Wolfgang: CSC Security, managing director
- Stein, Kurt: CSC Security, chief assistant to the director.

Appendix 3: Original Interview Guideline

Basis: Leitfaden Unternehmensinterviews

Eigene Unternehmensprozesse

- Gibt es für die Erbringung von Dienstleistungen einen konzipierten Plan (ähnlich wie Modellierungsplan einer Produktzusammensetzung)?
- Wie sieht ein solcher Plan aus?[122]
- Fokussiert er die Kundenkontakte/ die internen Organisationsschnittstellen/ den Kunden selbst?

Relevanz & Berücksichtigung von Kundenprozessen

- Was bedeuten Kundenprozesse für den Geschäftsverantwortlichen?
  - Individuelle Assoziation (d.h. was passiert während der Transaktion im Kopf des Kunden?) oder
  - Unternehmensbezogene Assoziation (welche Prozesse laufen im Kundenunternehmen ab?) zu diesem Begriff oder
  - welche Begrifflichkeiten werden dafür Unternehmensintern verwendet?
- Inwiefern berücksichtigt T-Systems die Prozesse des Kunden bei der Konzeption solcher „Prozessmodellierungen" (s. oben) bzw. für die Erstellung von Dienstleistungen?
  - Gründe dafür?
- Wer/was wird dann konkret berücksichtigt?:
  - das Kundenunternehmen als Ganzes oder
  - der einzelne Projekt-verantwortliche Mitarbeiter des Kundenunternehmens, mit dem die Transaktion abgewickelt wird
  - beides? Falls ja, wie werden diese beide Ebenen von Kundenprozessen dann differenziert?
- Wird bei Kundenprozessen hinsichtlich langjährigen Geschäftsbeziehungen/ Key-Accounts/ Neu-Kunden unterschieden?

Abbildung von Kundenprozessen

- Wie werden bei T-Systems Kundenprozesse in irgendeiner Art und Weise abgebildet/modelliert?[123]

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[122] Bsp.: Verwendung von Aktivitätskomponenten, Kausalstrukturen (IT-Prozessdarstellung) bzw. „Produktions"regeln, Blueprint (ARIS/ EPK o. Ä.)

- Falls ja (d.h. wird abgebildet): Warum?/ falls nein: Warum nicht?
- Wie kommt man an diese Kundenprozess-Informationen heran?
- Wie werden diese Informationen genutzt: →
  - im laufenden Transaktionsprozess?
  - für zukünftige Transaktionsprozesse?
  - wird aufgrund dieser Informationen versucht, Ideen für die Erstellung neuer DL zu generieren?
- Wird eine Veränderung der Kundenprozesse über die Zeit festgestellt? (Inwiefern?/Wodurch?)
- Sind die Kundenprozesse abhängig von der Anzahl der erlebten Dienstleistungstransaktionen (bspw. Unterschied Neukunden/ lange GB-Kunden)?
- Wird versucht, die Prozesse des Kunden zu beeinflussen?

Kundenprozess-Berücksichtigung & Leistungsperformance

- Werden dem Kunden genügend Informationen über den Prozessablauf der Dienstleistungserstellung zur Verfügung gestellt?
  - In welcher Form?: Broschüren, persönliche Gespräche, Video etc
- Weiß der Kunde, was ihn im Leistungserstellungsprozess erwartet? Hat der Kunde Ihres Erachtens eine klare Vorstellung vom Prozessablauf/genügend Wissen über den Prozessablauf?
- Ist es Ihres Erachtens von Vorteil, wenn der Kunde ein technisches Fachverständnis mitbringt (z.B. bessere Kommunikation über Fachtermini etc.)?
- Ist das Prozessdesign Ihrer Meinung nach kundengerecht?
  - Warum (nicht)? Wie beurteilen Sie das Prozessdesign?
- Wo im Prozessablauf entstehen Schwierigkeiten?
  - Warum?/ Worauf sind diese Probleme zurückzuführen?
  - Wo sind kritische Stellen im Prozess (z.B. in Bezug auf Kostenverursachung)?
- Beurteilung/ Einteilung der Kunden nach co-production performance/Erfolg des Prozessablaufs!

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123 Bsp.: Verwendung von Aktivitätskomponenten, Kausalstrukturen (IT-Prozessdarstellung) bzw. „Produktions"regeln, Blueprint, ARIS, EPK o.Ä.

Appendix 4: Original Questionnaire

In den nachfolgenden Fragen können Sie sich bei den Kategorien 1 bis 5 am Schulnotensystem orientieren – mit Note 1 als „sehr stark" oder „sehr viel" und Note 5 als „sehr schwach" bzw. „sehr wenig"!
[Extras: ja/nein-Fragen mit Antwortkategorien 1/2]
Untergliederung des Fragebogens in: A, B, C, D

A) Kenntnisstand des Kunden:

- Wie ausführlich haben Sie sich mit unserem Informationsmaterial zu Ihrem Servicepaket, d.h. AGBs, Detailkonzept und Übergabeprotokoll beschäftigt?
- Wurden Sie im Vorhinein ausreichend über den Ablaufprozess bei Störungsbearbeitungen informiert?
- Wieviel Erfahrung haben Sie mit Serviceabläufen ähnlicher Serviceprodukte?

Hinzufügen aus Kundendatenbank/ Informationen Hr. Frei etc.
1) Technologieverständnis (je nach Ansprechperson/Funktion im Unternehmen)
2) Erfahrungsgrad mit CSC Sec.Störungsmeldung (Auswertung eTTs: Anzahl Anrufe z.B. pro Monat)
3) Einstufung des Kunden/ Ansprechpartners als Experten (Funktion im U')

B) Prozessdesign:

- Gibt Ihnen der Serviceprozess, d.h. Ihr Ansprechpartner oder das System an sich die Möglichkeit, jederzeit einzuhaken und in den Ablauf einzugreifen (z.B. Schritte rückgängig machen, Änderungen bezüglich gegebener Informationen, Beantworten von Fragen)?
- Erhalten Sie nach jedem Schritt ausreichend Feedback von Ihrem Ansprechpartner oder dem System, so dass Sie wissen, dass Ihre Angaben bzw. Schritte korrekt waren?
- Wie gut sind Sie während der Auftragserteilung über den weiteren Verlauf der Auftragsbearbeitung informiert worden?
- Erscheint Ihnen der Serviceprozess insgesamt als in sich schlüssig und konsistent?
- Würden Sie die einzelnen Ablaufschritte des Serviceprozesses als logisch aufeinander abgestimmt beurteilen?
- Gibt es Ihres Erachtens innerhalb des Serviceprozesses irgendwelche Widersprüche oder Unklarheiten, die bei Ihnen Unsicherheiten hervorrufen (, wie nun weiter vorzugehen ist bzw. was als nächstes passieren soll) ?
- Hält der Serviceprozess Ihrer Meinung nach auch unvorhergesehenen Abweichungen stand?
- Ist der Ablauf des Serviceprozesses flexibel genug, um auf plötzliche Änderungen zu reagieren, ohne dass die Qualität (der Störungsbearbeitung) beeinträchtigt wird?
- Finden Sie, dass der Serviceprozess transparent gestaltet ist?
- Wie einfach fällt es Ihnen, dem Prozessablauf zu folgen?
- Im Falle einer Störungsmeldung erwartet man unter Umständen von Ihnen, dass Sie bestimmte Schritte ausführen und uns entsprechende Informationen übermitteln, damit wir die Störung beheben können. Wie einfach finden Sie es, diesen Ablauf nachzuvollziehen und entsprechend mit uns "mitzuarbeiten"?
- Geben Ihnen die einzeln auszuführenden Prozessschritte genügend Kontroll- und Einflussmöglichkeiten?

C) Kundenskript:

- Haben Sie eine sehr genaue Prozessvorstellung vom Serviceablauf bei der Auftragsbearbeitung?
- Wie genau wissen Sie, wo und an welcher Stelle Ihr Input gefordert ist (z.B. Mitteilung von Daten/Informationen, Re-boot der Maschine)?
- Wie automatisiert führen Sie Ihre Schritte während des Serviceprozesses aus?
- Haben Sie an vielen Stellen im Prozessablauf die Möglichkeit, zwischen verschiedenen Handlungsalternativen zu wählen (Entscheidungspunkte)?
- Wenn Sie an den Aufbau des Serviceprozesses denken, würden Sie diesen dann eher als einen Gesamtprozess definieren oder würden Sie das eher als eine Aneinanderreihung von kleineren Prozessabschnitten beschreiben?

D) Prozesserfolg/Kundenzufriedeneheit/Unternehmensdaten:

- Wie zufrieden sind Sie mit der Ausführungsqualität Ihrer Änderungsaufträge?
- Wie zufrieden sind Sie mit unserer Reaktionszeit zwischen Auftragserteilung und Ausführung?
- Wie beurteilen Sie die fachliche Kompetenz Ihres Ansprechpartners?
- Wie wichtig ist Ihnen die fachliche Kompetenz Ihres Ansprechpartners?
- WWie beurteilen Sie die Freundlichkeit Ihres Ansprechpartners?
- Wie wichtig sind Ihnen diese Eigenschaften beim Auftreten Ihres Ansprechpartners?
- Wie zufrieden sind Sie mit der Benachrichtigung über den aktuellen Status der Auftragsbearbeitung?
- Wie wichtig ist es Ihnen, über aktuellen Status der Auftragsbearbeitung informiert zu werden?
- Wie zufrieden sind Sie bei der Beauftragung von Änderungswünschen mit der Zusage eines festen Termins?
- Wie wichtig ist es Ihnen, einen festen Ausführungstermin Ihrer Änderungsaufträge genannt zu bekommen?
- Wie beurteilen Sie unsere Beratungsqualität bei Änderungswünschen?
- Wie wichtig ist für Sie unsere Beratung bei Änderungswünschen?
- Wie zufrieden sind Sie mit Benachrichtigungen nach Ausführung und Abschluss von Änderungsaufträgen?
- Wie wichtig ist das Reporting für Sie?
- Wie beurteilen Sie die Qualität unserer Informationen bei Angriffen auf Ihr Netz?
- Wie wichtig ist es Ihnen, über Angriffe auf Ihr Netz informiert zu werden?
- Wie beurteilen Sie die Qualität unserer Informationen bei Ausfällen in Ihrem Netz?
- Wie wichtig ist es Ihnen, über Ausfälle in Ihrem Netz informiert zu werden?
- Haben Sie Anregungen, wie wir unsere Serviceleistungen verbessern können? Wünsche?
- Würden Sie uns an andere Unternehmen als Dienstleister für Security-Lösungen im Internet weiterempfehlen?

Hinzufügen aus Datenbank etc. (sofern vorhanden):

1) *durchschnittliche Bearbeitungszeiten pro Kunde (Monats- oder (Halb-)Jahresperformance*
2) *Standort des Unternehmens*
3) *Unternehmensgröße (Mitarbeiteranzahl/Filiale oder insgesamtU, Umsatz)*
4) *Wie lange ist der Befragte bereits in der Position des U'Ansprechpartners für die Störungsbearbeitung?*

Appendix 5: Evaluation „face validity“

indicator	nc (number of correct attributions)	N (number of respondents)	psa-index	
1 (Info'material)	10	12	**83%**	
2 (ZufriedAuftret)	12	12	**100%**	
3 (Erfahrungähnl.)	11	12	**92%**	
4 (ZufriedReaktZeit)	10	12	**83%**	
5 (nachvollziehbar)	9	12	**75%**	
6 (Feedback)	9	12	**75%**	
7 (Konsistenz)	11	12	**92%**	
8 (Logisch)	11	12	**92%**	
9 (Transparenz)	11	12	**92%**	
10 (Abweichungen)	9	12	**75%**	
11 (ProzAblauf_folg)	9	12	**75%**	
12 (KontrollEinflss)	9	12	**75%**	
13 (ZufriedBenachr.)	9	12	**75%**	
14 (InfoMitteil)	11	12	**92%**	
15 (verinnerlProzess)	11	12	**92%**	
16 (ZufrKompetenz)	11	12	**92%**	
17 (Alternativ)	8	12	**67%**	re-phrase
18 (kennProzessa)	12	12	**100%**	
19 (Erstellungszeit)	2	12	**17%**	re-phrase
20 (QualInfomat)	11	12	**92%**	
21 (Technologkenn)	8	12	**67%**	re-phrase
22 (Expertise)	11	12	**92%**	
23 (Prozessvorstell)	11	12	**92%**	
24 (Prozessabfolge)	5	12	**42%**	re-phrase

Appendix 6: Summary: Interviews Gegenbauer

Ex ante: Two interviews were held with a service company of the facility management industry ("Gegenbauer"), one with the sales manager of the service center and the other one with the head of quality management. This way, it was possible to gather data from another service industry and ensure that the results from the main study company interviews were not just one-off situations. Furthermore, those interviews could be used to quasi-pre-test the course of the interviews to be done within the research hosting company of CSC Security.

Major results could be identified as follows:

- Internal service process procedures underlie the ISO 9001 certification. These regulations are often so strictly defined that they obstruct service innovation.
- Internal processes are modeled on the basis of ARIS toolset in order to guarantee that all employees are carrying out identical process activities and suggest a unified company image to the customer. This type of process modeling is schematic and refers to events during the service transaction. It focuses on internal interfaces within the company. Customer-related processes were taken in and integrated into the operational part of the process. That means customer-related processes are mainly related to marketing and sales activities because the sales department absorbs customer needs and forwards them. Customer needs are then integrated in tenders, for example.
- Customer processes are mostly understood as customer requests and needs that have to be implemented accordingly. The next level of customer processes then implies communicating the process to the customer.
- The actual customer process, i.e. what is actually happening on the customer side, remains a black spot.
- Customers often prefer to leave the details – from introducing to operating the service – to the service provider's expertise. This can often lead to inaccurate service concepts which results in additional costs for both parties during the operational process phase.
- In contrast, the service operator expects the customer to define specific rules and to deliver contributions in terms of co-designing the service. It is regarded as the customer's necessary know-how.
- According to the company experts' opinion, it has a beneficial effect on the service transaction process if the client whom they interact with possesses expertise and specialist knowledge.
- A continuous interaction and communication with the customer is considered as crucial in order to recognize warning signals and problems in advance. For that reason, the service provider tries to visit customer companies on a regular basis if possible.

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