The integration of customer needs in e-business systems

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ABSTRACT

The establishment of e-businesses has often been implemented from the inside of companies rather than from the customer perspective and the knowledge about customer needs from traditional businesses have been applied directly into new e-business systems.

The overall objective of this study is to identify how to better understand customer needs and how to integrate these needs in order to create customer value when developing and establishing e-business systems for products and services.

In order to better understand customer needs the study has an approach to understand and interpret peoples' opinions and feelings about e-business systems. The research at hand is qualitative and based on an action case method, with the main empirical input from interviews and observations. The research has mainly an inductive approach with empirical findings linked together with theories of customer value, service development, customer behaviour and process mapping.

Two cases form the basis of empirical input to the study. The first case was with an internal service provider, Tetra Pak Business Support AB, during the time when they developed and introduced a new web system for internal services. The second case was with the Swedish Pharmacy Direct, an organisation whose objective is to develop and introduce a web-system for purchase of pharmaceuticals to consumers.

Based on a value process framework of understanding, creating and delivering value, the study agrees to the importance of conceiving all steps in that value process when developing web-systems for end customers.

The study concludes that the first phase of understanding value has to be included in the development of e-business in order to capture the customer's need. If the first step is omitted and the latter two only are involved in the value process, the products and services developed are likely to fail because they originate from an internal perspective rather than from the perspective of the customers.

It is suggested in the thesis, to integrate the value process with the method of mapping the customer's process. By this integration the understanding value phase will be included and the development of the web-based system will turn from an internal into a customer perspective development.

Keywords: Web-based systems, e-business, customer perspective, customer process mapping, value process

APPENDED PAPERS

Paper one: Internet Sales Channel Effects On Packaging Logistics Methodologies

Paper two: Facilitation of web-based business systems establishment through inter-organizational process mapping and understanding

Paper three: The integration of customer needs in the establishment of an e-business system for internal service

Paper four: B2B rather than B2C to meet customer demands in the pharmaceutical retail industry

APPENDICES

1 INTRODUCTION

1.1 Background

Even though it is obvious to most organizations that the key success factor for companies is to develop and deliver services and products that satisfy customer needs[1], organizations tend to respond reactively to these needs. Consequently many products fail soon after market introduction.

Knowing and understanding customers is one key in the creation of successful products and services.[2] Early identification of customer needs and requirements is therefore a prerequisite for successful product and service development. It must be realized that it is the customer who decides whether a product or service will succeed or fail on the market, since it is customers who evaluate whether their needs, wants and expectations are satisfied.[3] One can say that consumers do have a decision monopoly in the sense that they can collectively reject a product or service that is launched on the market.

The importance of focusing on the customer in product development has been recognized in several studies.[4] Hence customer or user understanding among developers has to be emphasized. However, the employees of a company who have relations with customers are seldom the people who are involved in product development. The employees with competencies in customer/consumer knowledge often come from such disciplines as marketing, consumer behaviour, or other social science or economic branches of learning, and are most likely functionally and organizationally separated from employees involved in product development[5, 6]. The employees in product development, however, usually come from technical disciplines, and often adopt a problem solving approach whose starting point is finding solutions, rather than the needs of customers. It must be stressed that production or product development cannot be understood in isolation from consumption.[7] Producers tend to develop a demand for the products they have developed, i.e. technology push, while customers tend to seek products or services that are appropriate in their current or anticipated activities. Customers do not demand; rather, they want or need things that they can integrate in their existing way of life. Warde stresses that there has been

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[1] Bowersox, D.J. & Closs, D.J. (1996), *Logistical Management – The Integrated Supply Chain Process*, Mc-Graw Hill, Singapore

[2] Parasuraman, A. (1991), *Understanding customer expectations on service,* Sloan Management review, spring 1991

[3] Warde, A., McMeekin, A., Randles, S. Southerton, D. and Tether, B., (2001), *Economic integration and practical consumption: some theoretical considerations,* Paper for European Sociological Association Conference, Helsinki 2001

[4] Söderman, M. (2001) *Product Representations,* Doctoral Thesis, Chalmers Göteborg

[5] Deschamps, J-P, Ranganath Nayak, P, " Product Juggernauts, Harvard Business School Press, Massachusetts

[6] Tidd, J, Bessant, J. & Pavitt, K. (1997) *Managing innovation – Integrating Technological, Market and Organizational change,* Wiley

[7] Warde, A., McMeekin, A., Randles, S. Southerton, D. and Tether, B., (2001), *Economic integration and practical consumption: some theoretical considerations,* Paper for European Sociological Association Conference, Helsinki 2001

little attention paid to relaying customer wants and needs back to producers and developers.[8]

Parasuraman[9] has recognized the organizational deficiency and identified a number of gaps that are suggested for exploration and research. Among these recognized gaps, the ones interesting in this research are *the market information gap* that can be explained as the seller's incomplete or inaccurate knowledge of customers' expectations, and *the service standards gap* that can be explained as the seller's failure to translate these expectations into specifications for development. [10] It is identified as important to realize that customers are not always able to express their needs. One way to better understand their needs can be to map those needs through visualizing the customers' processes.[11] It is also important to distinguish between demand and consumption, as mentioned above. Consumption is referred to as the process of utilizing a product or service.[12] This consumption process is also valuable to understand in product and service development, since it might discern problems that the user experiences when using the product or service. These experienced problems can be used as an input in a development specification for problem solving.

In order to bridge the gap of understanding customers' expectations, an increasing number of companies are reorganising themselves into customer-oriented set-ups in order to assume the perspective of the customer — rather than creating solutions from inside their firms.[13] However, one critique that can be applied to customer-orientated companies is that the involvement of the customer occurs late in the internal business processes — the innovation process or the supply process — partly because a lack of understanding of the complete customer process is discerned.[14] If the customers were involved earlier in innovation or supply processes, it is assumed that the gaps identified by Parasuraman could be minimized or bridged.

Gummesson [15] has concluded that the establishment of e-businesses has often been implemented from the inside of companies rather than from the customer perspective. The knowledge of customer needs from traditional businesses has been applied directly into new e-business systems. Bauer et al. suggest a rethinking when introducing and developing e-business systems, such that the process steps that consider customer demands in the Internet environment must be harmonized with

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[8] Warde, A., McMeekin, A., Randles, S. Southerton, D. and Tether, B., (2001), *Economic integration and practical consumption: some theoretical considerations,* Paper for European Sociological Association Conference, Helsinki 2001

[9] Parasuraman, A. (1998), *Customer service in business-to-business markets: an agenda for research,* Journal of Business and Industrial Marketing, vol 13, no. 4/5

[10] Parasuraman, A. (1998), *Customer service in business-to-business markets: an agenda for research,* Journal of Business and Industrial Marketing, vol 13, no. 4/5

[11] Edvardsson, B., Gustafsson, A., Johnson, M.D. and Sanden, B. (2000), *New service development and innovation in the new economy,* Studentlitteratur, Lund

[12] Warde, A., McMeekin, A., Randles, S. Southerton, D. and Tether, B., (2001), *Economic integration and practical consumption: some theoretical considerations,* Paper for European Sociological Association Conference, Helsinki 2001

[13] Huber, F., Herrmann, A & Morgan, R, (2001), *Gaining competitive advantage through customer value oriented management,* Journal of Consumer Marketing

[14] Champy, J. (2001) "New products of new processes?", Sales & Marketing Management, May 2001

[15] Gummesson, E. (2000), *Relationsmarknadsföring: från 4P till 30R*, Liber Ekonomi, Sweden

the process steps of delivering value. If industry fails to appreciate and understand the needs of their customers, it will probably design something that does not have value for the customer.[16]

It is clear that customers who have access to the Internet will have the option to choose a channel for purchase i.e. traditional retail or web-based "e-tail". In the new electronic channel, however, customers have a larger potential to dictate their requirements on the supplier and the manufacturer of goods and services, as mentioned above. With an increased level of customer power, it can be expected that customers express their needs in terms of personal service at reasonable cost, timely deliveries, no damages, no out of stocks etc. to a greater extent than previously.[17] This means that in web-based trade the customer has become more important for companies to consider, since they are seen as a resource of competence with a higher level of influence on the company and its business processes. [18]

In the goal of creating products and services that satisfy customer needs, the method of process mapping has been used and is recommended by several authors in the field of business process engineering. [19,20,21] However, most of these process mapping methods are based on the internal business processes and align these processes to those of their customers. Once again, this assumes an internal perspective rather than the perspective of customers, which leads to a technology push rather than a market pull strategy for development.

The necessity to become more proactive in understanding customer needs must be stressed in order to add value to customers in an increasingly differentiated and interactive market. Due to this, companies must build more customer-oriented organizations, where the customer has a central role in the business process development.[22] Innovations in the field of e-business and the creation of web-based systems as new customer channels have, however, not only given suppliers increased competition and pressure but also opportunities to add value to their customers through adding service in the new virtual environment.[23]

1.2 Problem definition

The idea in the initial stage of this research was to study customer needs and value creation in the development of packaging systems suitable for fast moving consumer goods traded over the Internet. The first literature study focused on customer needs in

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[16] Bauer, M.J., Poirier, C.C., CSC, Lawrence, L., Bermudez, J. AMR Research, (2001), *e-businesses: The Strategic Impact on Supply Chain and Logistics,* CLM, USA

[17] Wikström, S.; Lundkvist, A.; Beckérus, Å., (1998), *Det interaktiva företaget – med kunden som största resurs*, Svenska Förlaget

[18] Wikström, S.; Lundkvist, A.; Beckérus, Å., (1998), *Det interaktiva företaget – med kunden som största resurs*, Svenska Förlaget

[19] Benesko, G. (1997) *Inter-Corporate Business Engineering*, Research Triangle Consultants Inc.

[20] Rummler, G.A. & Brache, A.P. (1995), *Improving performance – how to manage the white space on the organization chart*, 2nd edition, Jossey-Bass Publishers

[21] Keller, P.J.; Jacka, J.M., (1999), "Process Mapping", *Internal auditor,* Vol.41, Issue 5, pp.60-65

[22] Wikström, S.; Lundkvist, A.; Beckérus, Å., (1998), *Det interaktiva företaget – med kunden som största resurs*, Svenska Förlaget.

[23] McIvor, R.; Humphreys, P.; Huang, G; Electronic Commerce: re-engineering the buyer-supplier interface, *Business Process Management Journal,* Vol 6 No.2 2000, pp122-138

an Internet environment and on packaging systems. It was clear that there was a lack of previous research in both areas. It was also ascertained from the literature that hardly any research is devoted to e-business development from a customer/consumer perspective. Companies have tended to develop e-business systems that only transfer customer knowledge from traditional retail into the new channel of the Internet. Therefore it is interesting and challenging to launch the research with the customer perspective on web-based systems development. It will be useful and necessary to acquire knowledge about customer needs in e-business prior to heading towards the goal of learning more about packaging systems in an e-business context, inasmuch as encapsulating both in one study would be too ambitious.

The overall problem identified in this study is the lack of taking the customer perspective when considering customer or end user needs in the development of web-based business systems. This concern has led into three underlying research questions – which I have decided to use as a basis for method development.

- How can customer demands on an e-business system for consumer goods or services be better understood?
- How can an increased understanding of customer needs and demands be taken into account when web systems are developed?
- How can process mapping be used and developed as a method for integrating customer needs in e-business development?

1.3 The purpose of this research

The overall purpose of this study is to increase the knowledge of how to better understand and integrate customer needs in order to create customer value when developing and implementing e-business systems for products and services.

One part of the research is to explore the gaps in expectations between customers or end users and suppliers about newly developed and introduced web systems. The purpose of this first part is to gain a better understanding of customer needs in e-business.

A second part of the research focuses on developing a method that can be used in order to integrate customer needs in the development of web-based systems. The purpose of this part is to find a method for evaluating how customer needs will influence the development of web-based business systems and, furthermore, how this knowledge about customer needs can be used to create value to customers.

The idea behind this research project has been to develop a method for understanding customer needs and expectations by mapping end users in the processes they use when approaching a supplier. Customer processes in the interactive channel of the Internet are of specific interest for this particular research.

1.4 Demarcations

The surrounding world conceals a tremendous amount of phenomena impossible to map; hence objects related and relevant to the specific research problem must be selected. The focus of this research is on the interrelation between a supplier and its customers in an e-business environment, seen from the perspective of the customer according to Figure 1.

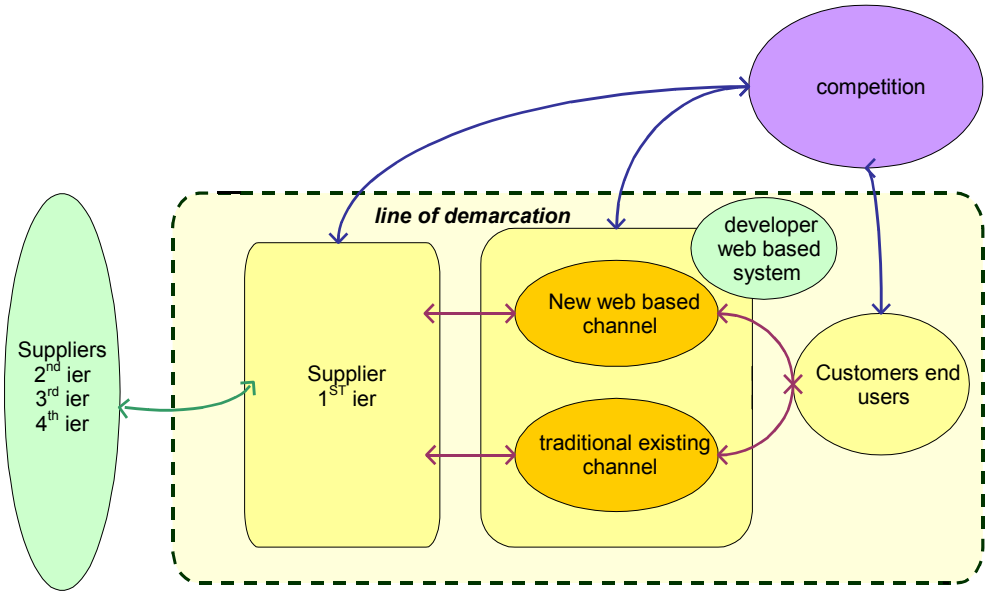

Figure 1: Line of demarcation for area of study

The customer in this thesis is considered an end customer or consumer, i.e. individuals who are taking ownership of the delivered products or services and also using it.

Almost all organisations have competitors, but in order to isolate the interrelation between a supplier and its customers, competition has been excluded from the study, even if it influences the development process and is involved as an input of knowledge. The cases studied have thus been of the character that they are not in typical competitive environments. The first case, which is an internal service provider, has competition from the open market outside the corporation, but some services provided are mandatory to the customers, while the services that have outside competition are easier to access internally than externally; thus the competition is not compared to competition on the open market. The second case has been carried out in the Swedish Pharmacy, which is a state-owned monopoly, with no competition on the national market. However, some competition from international pharmacies has started to show up in the new Internet channel.

Since the major interest in this research is the perspective of customers seen from the demand side of a value chain, the suppliers to the case companies are omitted from this study.

1.5 Research outline

The research outline is built up around two case studies, one at an internal service provider within Tetra Pak and the second at the Swedish Pharmacy. The thesis is based on these two case studies in combination with theories related to the subject of interest. The research has been carried out according to the schematic outline in Figure 2.

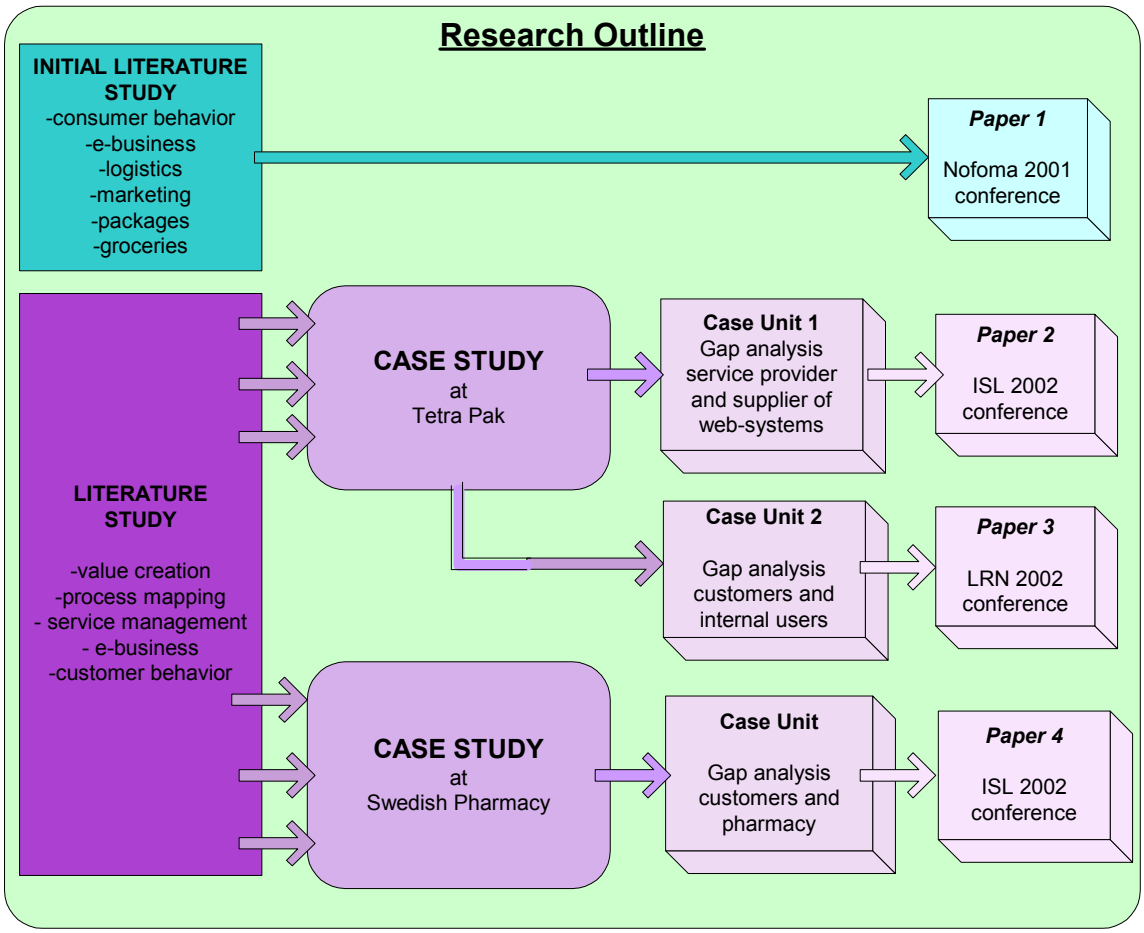

Figure 2: Schematic research outline

1.6 Thesis outline

The present thesis consists of one overall part including research methodology, frame of reference, case descriptions, analysis and research conclusions. The thesis also presents four appended papers that have been accepted and presented at different logistics conferences during the course of research. The outline of the thesis is based on the following description.

Chapter 1- Introduction

This chapter gives an introduction to the area of this research, where the research problem and the purpose of the research are explained. The demarcations made in the study are also part of this chapter, as well as an outline of the research. This chapter

gives the reader an overview of the research and will hopefully both provide understanding and arouse curiosity with the reader.

Chapter 2 - Methodology

The methodology chapter provides a description of the methodological approach and strategy taken in this research. Furthermore it gives a description of the research strategy that aligns to that methodological approach. The chapter also contains descriptions of the different methods used in the two case studies that have been part of this research.

Chapter 3 – Frame of reference

In this chapter the theoretical framework used as a base of research is described in detail. The theoretical areas of customer value, consumer behaviour in e-business customer process mapping, product and service development are covered in the chapter.

Chapter 4 – The Tetra Pak Business Support case

The first case study at Tetra Pak Business Support is described in this chapter that starts with a company presentation. The company presentation is followed by a case description and the results related to this specific case.

Chapter 5 - The Swedish Pharmacy case

This chapter describes the second case study in this research that was undertaken at the Swedish Pharmacy and the division Pharmacy Direct. The chapter contains information about the company, a detailed description of the case conducted and results related to the specific case.

Chapter 6 – Analysis

This chapter provides a joint analysis of the two cases. The analysis links the empirical findings into the theoretical issues elaborated on in the frame of reference. The empirical findings serve as a basis for integration into certain existing theoretical models, and for further development of these models into methods for integrating customer needs in the development of web-based systems.

Chapter 7 – Conclusions

The conclusions from this research are summarised and presented in this chapter.

Chapter 8 - Future research

In the final chapter a discussion of matters for future research in this and related areas is presented and discussed. The idea of using the methods presented in this research in other applications of systems development, such as in packaging systems development, is elaborated on.

Appended papers

This part includes four papers that have been presented at different conferences and published in the conference proceedings. The first paper presents the initial literature study of this research, while two papers are about findings from the Tetra Pak case study and the fourth paper is about findings from the pharmacy case study.

2 METHODOLOGY

2.1 Research Approach

One aim of research is to increase knowledge in a certain area of interest. Choosing a research approach, a research strategy and appropriate theories suitable to the identified research problem will increase the probability of achieving that knowledge. The overall aim of this study is to increase our knowledge of how to better understand customer needs and create customer value when establishing e-business systems for products and services. There are obviously several ways to approach such a problem, and the result will depend on the researcher and on his/her approach. Arbnor et al.[24] make a distinction between knowledge gained through explanation and knowledge gained through understanding, as presented in Figure 3, where they also place three suggested research approaches: the analytical approach, the systems approach and the actors approach.

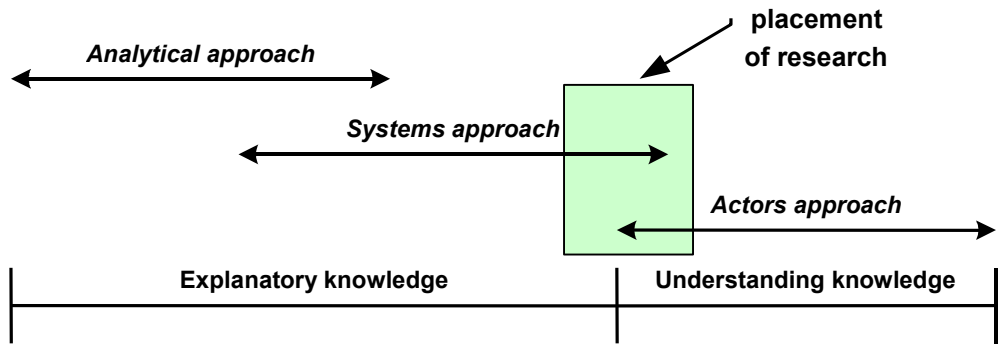

Figure 3: The Arbnor and Bjerke Framework[25]

Since part of this research is to increase the knowledge of how to better understand customer needs in the development of web systems, it can be concluded that peoples' (customers') opinions and feelings about e-business systems must be understood and interpreted. This excludes the analytical approach that is appropriate for experiments where the knowledge acquired has to be independent of individuals.[26] In order to choose a suitable approach for this research project, I start by introducing different approaches adjacent to what I consider suitable for the stated problem.

2.1.1 Systems approach

The aim of the systems approach is to create an objective view of a particular reality. However, as part of that creation, individuals' subjective views, ideas and ambitions should be incorporated as input to the total view of a complex reality.[27] The major characteristic of the systems approach is that the reality is arranged in a certain way

[24] Arbnor, I. and Bjerke, B., (1994), *Företagsekonomisk metodlära,* Studentlitteratur, Lund
[25] Arbnor, I. and Bjerke, B., (1994), *Företagsekonomisk metodlära,* Studentlitteratur, Lund.
[26] Arbnor, I. and Bjerke, B., (1994), *Företagsekonomisk metodlära,* Studentlitteratur, Lund.
[27] Arbnor, I. and Bjerke, B., (1994), *Företagsekonomisk metodlära,* Studentlitteratur, Lund

and that the different parts of this arranged reality are amalgamated and represent a whole. That whole is not just the sum of the different parts; the whole diverges from the sum of the different parts through effects of negative and positive synergies born in the relations between the different parts. The systems approach concentrates on the interaction between the different parts in the attempt to take all relevant aspects into account.[28] Thus in the systems approach understanding and description of the different parts must be seen from a perspective of the whole.

Systems can be characterised as open or closed. In open systems there is an exchange of material or information with the surrounding environment,[29] which means that all organisations can be considered as open systems.[30]

The achievement of knowledge from a systems approach will be dependent on the system being studied. Individuals or parts of organisations can be seen as parts of a system, but their behaviour is dependent on the system they are part of. This means that if the same individuals were put into another type of system, their behaviour would probably be different and dependent on that specific system.[31] Therefore it is important to define the system being studied by visualising objects in a way that relates to the aspects of the stated problem. It is important to include the objects that are related to and will affect the system in a way that is important and relevant for the research.[32]

The systems approach could be one suitable approach for the problem stated in this research project, since a web-based system can be mapped as a subsystem within a complex system of an organisation with links to customers and suppliers of that organisation. However, in my opinion a complete objective reality (as suggested in the systems approach) cannot be achieved when the creation of reality involves the subjectivity of individuals.

2.1.2 The actors approach

In the actors approach, reality is seen as a human construction where the driving force is to create, change and exceed. The knowledge in this approach is gained from interpretation of different relations and interrelated factors. This knowledge transforms in a continuous process of development of the reality constructed by human beings. In the actors approach there is an interactive development of understanding, which may be described in process models or other institutional models, and the result will be presented through direct or created actions.[33]

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[28] Checkland, P. (1993) *Systems Thinking, Systems Practice,* John Wiley &Sons, Chichester
[29] Checkland, P. (1993) *Systems Thinking, Systems Practice,* John Wiley &Sons, Chichester
[30] Norrbom ,C. (1971) *Systemteori – en introduktion,* M&B Fackboksförlaget, Stockholm
[31] Checkland, P. (1993) *Systems Thinking, Systems Practice,* John Wiley &Sons, Chichester.
[32] Norrbom ,C. (1971) *Systemteori – en introduktion,* M&B fackboksförlaget, Stockholm
[33] Arbnor, I. and Bjerke, B., (1994), *Företagsekonomisk metodlära,* Studentlitteratur, Lund

2.1.3 The approach in this research project

Research about web-systems, as in this study, is usually of a multidisciplinary nature, which leads to a risk of placing itself between different research traditions.[34] Accordingly, I had the same feeling of being somewhere in between the two above-mentioned approaches, i.e. systems approach and action research approach, in my study of the development of web-based business systems from a customer perspective.

An introduction of web-based systems cannot be made in isolation (even though some enthusiasts have tried), since it will be affected by, and will also affect, surrounding systems, which corresponds to the thinking behind the systems approach. Thus, the total business system will constitute a complex system made up of smaller subsystems or parts, where the web system can be considered a subsystem that affects the whole business system. Furthermore, individuals who are directly or indirectly related to the web system as stakeholders will affect it and also be affected by it. When the research involves the opinion and behaviour of individuals who are part of the system being studied as well as part of an interactive continuous development, I am certain that there must be a subjective portion involved in the process and analysis of research that does in fact correspond to the actors approach of understanding and subjectivity.

2.2 Research Strategy

Proceeding from the research approach, in the borderland between the systems approach and the actors approach that is engaged for this specific research project, a suitable research strategy will be selected. The research strategy that conforms to the research approach describes the process of how this present research will be carried out.

2.2.1 Action research

When the research involves subjectivity, as in organisational systems described above, the strategy of action research can be used. Action research is a way of building theory and descriptions within the context of practice itself, where theories are tested through intervention in the organisational laboratory.[35] Action research refers to the conjunction of research, action and participation, where some people of the system being studied participate actively together with the researcher throughout the research process.[36,37] Action research is about processes or phenomena that the researcher initiates or affects. The research process starts in problems faced in an organisation,

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[34] Braa, K. and Vidgen, R. *Interpretation, intervention, and reduction in the organisational laboratory: a framework for in-context information systems research*

[35] Braa, K. and Vidgen, R. *Interpretation, intervention, and reduction in the organisational laboratory: a framework for in-context information systems research*

[36] Greenwood, D.J. & Levin, M. (1998) *Introduction to Action Research,* Sage Pub.

[37] Whyte, W.F (1991) *Participatory action research,* Sage Pub.

where the research results are based on current benefits from the research to the organisation and also on rethinking and restructuring relations that will carry the process further.[38] The aim of action research is to gain knowledge through deliberated interventions in order to achieve changes in the organisational setting or to change a situation in the research environment.[39,40] In action research, the researcher is closely related to the system of research with many interrelations with individuals of the system. This will inevitably lead to subjectivity in the analysis of interpretation and intervention by the researcher. Séror[41] stresses the critical role of managerial participation in research, in the way it facilitates the synergies between theory and practice; however, it also presents a risk of diminished objectivity.

2.3 Research Method

2.3.1 Action case method

When I became acquainted with the action case method presented by Braa et al.,[42] I found that their proposed method would go well with my research problem. The model suggested by Braa et al. as in Figure 4, is one where *prediction* is aligned with the systematic reduction of a positivistic approach, *understanding* with an interpretative approach and finally *change* with an interventionist approach.

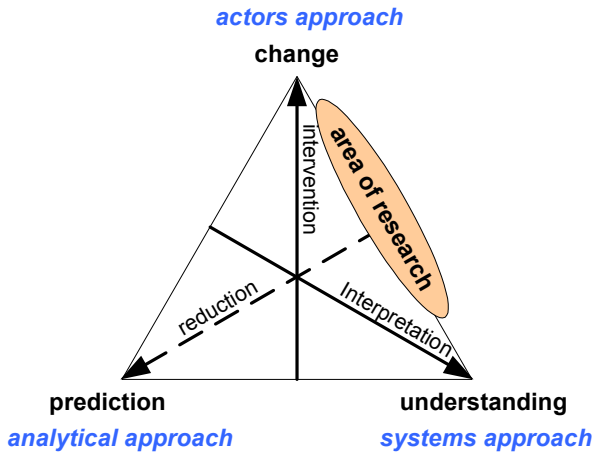

Figure 4: Research approach based on Braa et al. referred to Arbnor and Bjerke

Referring to the framework presented by Arbnor and Bjerke[43] in Figure 3, the prediction can be aligned to the analytical approach with explanatory knowledge, while

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[38] Whyte, W.F (1991) *Participatory action research,* Sage Pub.

[39] Braa, K. and Vidgen, R., (1999) Interpretation, intervention, and reduction in the organisational laboratory: a framework for in-context information systems research, Accounting, Management and Information Technologies, vol.9, no.1, pp. 25-47.

[40] Kvale, S. (1997),*Den kvalitativa forskningsintervjun*, Studentlitteratur, Lund.

[41] Séror, A. *Action research for international information technology transfer: a methodology and network model,* Technovition vol.16, no.8

[42] Braa, K. and Vidgen, R., (1999) Interpretation, intervention, and reduction in the organisational laboratory: a framework for in-context information systems research, Accounting, Management and Information Technologies, vol.9, no.1, pp. 25-47.

[43] Arbnor, I. and Bjerke, B., (1994), *Företagsekonomisk metodlära,* Studentlitteratur, Lund

the interpretative approach of understanding may be aligned to the systems approach, and finally the interventionist approach aligns to the actors approach based on understanding knowledge. As this study is located between the systems approach and the actors approach in the Arbnor and Bjerke framework, the corresponding reasoning will place it between intervention and interpretation, as indicated in Figure 4.

Braa and Vidgen[44] suggest aligning field experiments with prediction, case study with understanding and action research with change, as in Figure 5, where the action case method is placed in between change and understanding, thus in between interpretation and intervention. This is also the most appropriate placement of this research as marked in Figure 5, since the strategy taken is action research with the case study method as the basis.

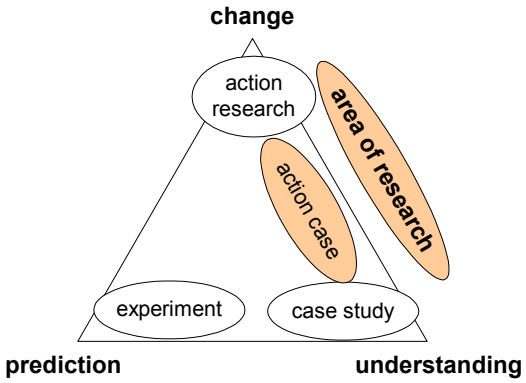

Figure 5: Action case approach modified from Braa et al.

2.3.2 Character of problem

Desiring to study customer needs in the establishment of e-business systems, I concluded in the above discussion that the research strategy aligns to that of action case research, where I need to involve myself in relations to individuals affected by the introduction of a web-based system. Furthermore, the object of study has to be defined as a system, and thus must be possible to demarcate.

It can, however, be acknowledged as difficult to find a case where the action case method can be applied, since it might be hard to find cases where one is allowed to be involved to a sufficient degree.

2.3.3 Qualitative research

In qualitative research, routines or difficult moments in peoples' lives are studied and interpreted in order to make sense of phenomena in a studied system. Qualitative research is based on multi-methods with input from a variety of empirical materials,

[44] Braa, K. and Vidgen, R., (1999) Interpretation, intervention, and reduction in the organisational laboratory: a framework for in-context information systems research, Accounting, Management and Information Technologies, vol.9, no.1, pp. 25-47

such as existing company data, interviews, observations, personal experience, interactions etc., and involves an interpretive approach to its subject matter. By the use of multi-methods the attempt is to achieve an in-depth understanding of the phenomenon being studied. [45] Through qualitative methods like interviews and observations, one will get close to the actors' perspectives as a researcher, in such a way that you interact with the individuals in the system. The interrelations between the individuals studied and the researcher leads to a research approach in which a totally objective reality could not be captured, since subjectivity must be involved in the process and the analysis.[46]

Qualitative research focuses on processes and meanings of socially constructed realities with an intimate relation between the researcher and the studied system. The emphasis is on how social experience is created and how processes are related, as opposed to quantitative research where measurements and causal relationships between variables are measured and analysed.

2.3.4 Case Studies

The research method of case studies focuses on understanding dynamics in a certain setting, where single or multiple cases and numerous levels of analysis can be involved. As described by Braa et al., case studies use an interpretive approach to understanding the phenomenon being studied. [47] The collection of data in case studies typically combines secondary data, interviews, questionnaires and observations, and the analysis may be qualitative or quantitative. Case studies can be used to provide descriptions, test theories or generate theories.[48] Case studies can, according to Yin, be of exploratory, descriptive or explanatory character, and it is appropriate to use case studies when research questions of "how", "who" "what", and "why" are going to be answered.[49] According to Ellram[50] the latter two suits better with exploratory case studies while the first questions are good for any kind of case study.

I have found the case study method to be suitable in this research since the main research question, as well as the underlying questions, are of "how" character. The selected research approach, with the main emphasis in understanding knowledge and the selected action case strategy placed between understanding and change, also supports a case study. Furthermore there has been little to find about the subject in previous research or literature; hence it is important to add primary data from organisations that want to initiate web-based business systems available to their

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[45] Denzin, N.K. and Lincoln, Y.S. (1998) *The Landscape of qualitative research, Theories and Issues,* Sage Publications
[46] Denzin, N.K. and Lincoln, Y.S. (1998) *The Landscape of qualitative research, Theories and Issues,* Sage Publications
[47] Braa, K. and Vidgen, R., (1999) Interpretation, intervention, and reduction in the organisational laboratory: a framework for in-context information systems research, Accounting, Management and Information Technologies, vol.9, no.1, pp. 25-47
[48] Eisenhardt, K. (1989) *Building Theories from Case Study Research,* Academy of Management Review,
[49] Yin, R. K., (1994) *Case Study Research,* Sage Publications
[50] Ellram, L.M., (1996), *The use of case study method in logistics research",* Journal of Business Logistics, vol.17, issue 2

customers. Based on this reasoning, the study will adopt an empirical basis and hence will be predominantly inductive.

Case studies can be conducted quantitatively or qualitatively, as mentioned above. In this research some quantitative studies of customer opinions have been provided by the case companies beforehand and during the course of research. Through adding a qualitative perspective on the customers' situations input about the opinions and feelings of individuals in the systems studied will be added and a richness and depth in input data will be achieved. Another reason for adding qualitative input was the difficulties in evaluating individuals' opinions from the available quantitative studies. Since the aim is to increase our understanding of how to capture customer needs, an important component will be to listen to customers and users, where the case study method based on interviews is suitable. The quantitative studies provided have been used in order to verify some of the findings in the qualitative input, as well as to highlight issues that seem to diverge from the different studies.

In the research into taking customer needs into consideration in the development of web-based systems, certain criteria were established in the selection of cases. In the process of selecting suitable cases I think it is important to find cases that are likely to answer the research questions or that at least will give input to an analysis of the questions. It is also important that access be given to information so that different aspects of the research problem can be considered.

The criteria used in the selection of cases for this research were:

- New development of a web-based e-business solution, where the research can follow the process of development, over a period of time.
- The implementation of the web-system should be as an additional channel to the already existing business, in order to study the effects from the introduction in relation to the whole already existing system.
- The web-based system should include a commercial element where products and/or services are sold to end-users.
- Accessible secondary data from customer surveys and internal investigations (beneficial but not necessary).
- Permission to be involved as an active researcher through participation in meetings, conducting observations and having continuous discussions.

2.4 Data Collection

In the process of gathering qualitative data from interviews and observations, a great deal of interaction between the researcher and the staff of the case company is involved.[51] As mentioned earlier, the data collection in a qualitative study can be based

[51] McIvor, R.; Humphreys, P.; Huang, G; Electronic Commerce: re-engineering the buyer-supplier interface, *Business Process Management Journal,* Vol 6 No.2 2000, pp122-138

on a variety of empirical input. The data in this study have been procured through in-depth interviews, observation, and, in one of the cases, active research participation, and also through the existing data available from the different case companies. Input from the literature has been added during the entire course of this research.

2.4.1.1 Literature review

In order to get an idea of the research done in the field of e-commerce and packaging from a consumer perspective, a literature study was an initial step of my study. Three different search areas in relation to e-commerce and packaging were selected as they all relate to the field. The three areas were:

- Consumer behaviour research
- Logistics research
- Marketing and merchandising research

An initial search in the EBSCO, Compendex and Emerald databases was carried out from all three perspectives relating to e-commerce. In addition, a specific search in *International Journal of Business, International Journal of Physical Distribution and Logistics, International Journal of Logistics Management* and *Journal of Business Logistics* as well as ongoing work at the Department of Packaging Logistics at Lund University and at the Department of Industrial Engineering and Management, Helsinki University were conducted from the logistics perspective.

In the marketing and merchandising perspective, an additional search was carried out in *Journal of Consumer Marketing, International Journal of Retail and Distribution Management, Journal of Brand Management* and *Journal of Retailing.*

The key words used in this first study were e-commerce, consumer behaviour, packaging, Internet and groceries. The analysis and results from this literature study were presented in the first research paper (Appended paper 1), where the main conclusion was that little research had been done in the development of e-commerce and packaging systems from a consumer perspective. This initial literature study was the major input for the decision to focus on development of e-business systems in the first stage of research, and to postpone exploring the development of packaging systems in an e-business environment.

2.4.1.2 Interview

When interpretations of relations between individuals or parts of systems that cannot be quantified are of interest, as in this study, an interview with the individuals concerned will be appropriate. The goal of an interview is to build qualitative knowledge through profound description analysis and meaning interpretation of central themes in the system around the interviewee. An interview that is sensitively accomplished, with a proximity to the world of the interviewee, may acquire

knowledge that can make a better situation in the system of which the individual is a part.[52]

A research interview, contrary to an ordinary conversation, has a methodological awareness in which the researcher takes a critical view of the dialogue and dynamics between the interviewer and the interviewee. An interview in qualitative research is often considered as semi-structured, which means that it has an interview guide around themes of interest to the study, where the researcher can steer the interview in the direction of the themes.[53] Kvale defines a semi-structured interview as " an interview where the goal is to achieve descriptions of the world of the life of the interviewee, with aim of interpreting the meaning of the described phenomena." (Freely translated from Swedish)

The selection of individuals for interviews can be based upon recommendation, understanding, or problem related; in the latter, individuals who in different ways are concerned with the stated problem are selected. The selection of interviewees in this research has been problem related.

2.4.1.3 Observation

Observations can be characterised as direct or indirect. The indirect observation can seek to gather secondary data from material already existing in a given case, and the direct observations collect primary input in a current situation. The goal of direct observation is to study the course of events in a current state.[54] The main reason for adding observation to the interviews in this research is that there can be some divergence between acting and speaking, and the observation can be used in order to triangulate towards secondary data or primary interview findings.

2.4.2 Process mapping as a method

Since the input from qualitative studies will be based on subjective opinions from the interviewees, it is desirable to visualize the input in order to elucidate the results and to gain an increased understanding in the analysis. The idea of mapping the processes of the interviewees is one method of visualization. A process map is a symbolic way of presenting activities that are put together in chronological order to realize a product or a service. In previous research the criticism of process mapping has been that it excludes the subjective parts of communication and interaction among people[55], but if used as a complement to subjective opinions from interviewees it can be used to facilitate a deeper analysis.

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[52] Kvale, S., (1997),*Den kvalitativa forskningsintervjun*, Studentlitteratur, Lund
[53] Kvale, S., (1997),*Den kvalitativa forskningsintervjun*, Studentlitteratur, Lund.
[54] Kvale, S., (1997), *Den kvalitativa forskningsintervjun*, Studentlitteratur, Lund
[55] Isaksson, S. (2001) *Processbeskrivning genom tjänstekartan,* Licenciate Thesis, CTF Karlstad

A process can be defined as by Keller et al.: "*a combination of inputs, actions, objects and outputs, used to make objective studies to evaluate and understand critical interrelationships in a business*".[56]

Or defined as by Andersson et al.[57]: " *a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer*".

Keller et al. argue that relevant processes must be understood in order to judge whether customer needs, or business objectives, are met. Furthermore they suggest a five-step strategy for process mapping.

1. Establish process boundaries
2. Develop a data gathering plan
3. Interview process participants
4. Generate a process map
5. Analyse and use the map

Process mapping has been widely used in businesses as a tool for understanding internal processes; however, the link between the customers and these process maps usually been weak or neglected.[58]

2.4.3 Customer process mapping

As mentioned above, process mapping has become a tool for understanding business objective and internal business processes. However, in order to understand customer needs, the customer process must be the basis and starting point, where the whole life cycle from how the customer evaluates the product, acquires it, uses it and disposes of it after usage, needs to be considered and mapped[59]. In order to succeed in that understanding, the customer should be put at the beginning of a demand chain rather than at the end of a supply chain. It is also important to map the end customer process in addition to the process of the customer that is the next link in the supply chain, since it is the end customer who decides if a product or service will be accepted on the market or not.

A customer process can be identified as a collection of tasks or steps that the customer goes through in order to achieve a goal.[60] The steps the customer goes through in order to acquire and use a product or service that fulfils a fundamental need of that customer constitutes the process. The step-by-step construction of the underlying process associated with a product or service should be created by using input from interviews[61] and available customer data in order to evaluate the outcome to the customer, and thereby to identify problems and concerns experienced by the

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[56] Keller, P.J.; Jacka, J.M., (1999) "Process Mapping", *Internal auditor, Vol.41, Issue 5 60-65*
[57] Andersson, J. and Naurus, J., (1998), *Business Market Management,* Prentice Hall, N.J
[58] Champy, J., Buday, R., Nohria, N. (1996) "Creating the electronic community" *Information Week, 6/10/96*
[59] Grönroos, C. (2000), *Service Management and Marketing,* Wiley & Sons Ltd.
[60] Champy, J., Buday, R., Nohria, N. (1996) "Creating the electronic community" *Information Week, 6/10/96*
[61] Ulwick, A. (2002), *Turn customer input into innovation,* Harvard Business Review January 2002

customer throughout the entire process. Champy et al.[62] argue that these consumer or end user processes can be dramatically more efficient and effective if properly redesigned for electronic commerce.

2.4.4 Links of process maps

The idea of starting with the customers' process and mapping it in order to analyse where the customer links her/his process with the process of the supplier is suggested as an approach of this study. This approach of starting with the customer's process is rarely found in previous research or among practitioners, where instead the basis of process mapping is in the internal business processes with links outside the organisation into customer and suppliers. By mapping the customer's process and analysing where it links into the supplier, one can evaluate whether the link has an appropriate place, in terms of expectations and timing, or if it should be brought forward in order to become more effective.

2.4.5 Validation

In order to gain validity from a qualitative study with a systems approach, it is considered important to reflect upon the selected system from different perspectives. This can be done through active and frequent participation in the real system during the course of study, and through gathering as much data, by different methods, within the system as possible.[63] Furthermore, the system can be reflected on from different theoretical perspectives.

Internal validity[64] represents the degree to which findings correctly map the phenomenon in question. Using a combination of methods for data collection will enhance the internal validity.[65] In the first study of Tetra Pak the data collection was done with such a combination of methods through interviews, observations, active participation and process mapping, as presented in Figure 6.

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[62] Champy, J., Buday, R., Nohria, N. (1996) "Creating the electronic community" *Information Week, 6/10/96*
[63] Kvale, S. *Den kvalitativa forskningsintervjun*, Studentlitteratur, Lund.
[64] Denzin, N.K. and Lincoln, Y.S. (1998) *The Landscape of qualitative research, Theories and Issues,* Sage Publications
[65] Yin, R. K., (1994) *Case Study Research"* Sage Publications

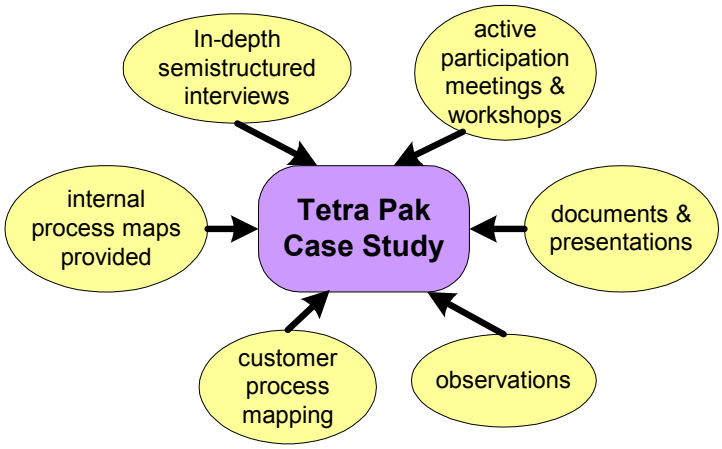

Figure 6: Data collection in the Tetra Pak Case

Due to the openness of Tetra Pak Business Support AB, the action research approach was made possible and the results from the data analysis were considered and used and evaluated by the case company during the course of research. The evaluation by the company also represents a form of validation of the ideas suggested from this research.

Similarly, the data collection in the second study at the Swedish Pharmacy has included different methods of data collection as presented in Figure 7. However in this study, active research has not been applied to the same extent as in the Tetra Pak case. The Pharmacy, however, did provide a lot of data beforehand from surveys and studies made prior to the start of this particular case study.

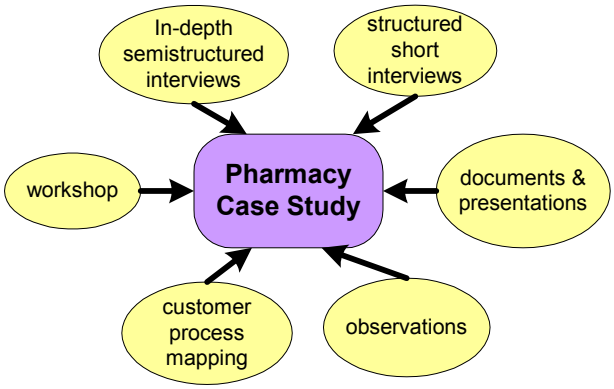

Figure 7: Data collection in the Pharmacy Case

3 FRAME OF REFERENCE

3.1 Evolution of Logistics

Logistics has been an area of research and practice since the early 1900s. Logistics is defined as follows by Council of Logistics' Management:[66]

Logistics is that part of the supply chain process that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements.

In a study of logistics as a discipline, based on interviews with a few prominent scholars in the field, an evolutionary model of logistics can be explained as in the following table:

Table 1:Evolution of logistics as a field in business and research. (Developed from model by Kent and Flint[67])

Era	Major characteristics	Major influence
Farm to market,	Transportation, Steam engine	Agricultural economics
Segmented functions	Independent functional areas, physical distribution, internal combustion	Military
Integrated functions	Total cost, system approach, integration of logistics	Industrial economics
Customer focus	Customer service, Inventory carrying, productivity, link node	Management science
Logistics as differentiator	Integrated supply, Logistics channel, globalisation, reverse logistics, environmental logistics	Information technology, management strategy
Behavioural and boundary spanning	Service response logistics, behavioural aspects of inter-firm, theory development	Marketing, social sciences

These eras show that there has been an evolution of logistics into a complex, constantly changing area, which has made it an area interesting for further investigation and research.

The most recent era is defined as behavioural and boundary spanning, which has its major characteristics in service response logistics and interfirm behaviour, and its major influence from areas of marketing and social science. Future logistics research is supposed to have behavioural understanding, specifically in the field of customer and consumer behaviour. Furthermore it is predicted that logistics research will involve integration through processes that extend across and beyond traditional supply chains, across functional boundaries and across theoretical disciplines.[68] Stock recommends including existing theories in the development of new logistics theories in order to

[66] http://www.clm1.org/ 2002-09-24
[67] Kent, J. L. Jr and Flint D. J., (1997) *Perspectives on the evolution of logistics thought.* Journal of Business Logistics vol.18
[68] Kent, J. L. Jr, and Flint D.J., (1997), *Perspectives on the evolution of logistics thought,* Journal of Business Logistics vol.18

benefit from the experience in other fields, further enhancement of cross–disciplinary linkages and advances in knowledge and understanding.[69]

As indicated by these former studies, the field of logistics has grown to include several other research disciplines and evolved into complex systems where many different perspectives have to be considered.

3.2 Theoretical disciplines

With the desire to better understand customer needs and to integrate these needs in the development and implementation of web-based systems, certain theories have been chosen for deeper study in order to compile issues to be examined in the empirical world. The theory helps to create meaningful analysis in order to provide a base for knowledge creation.[70]

The theoretical areas of interest have been:

- Customer value
- Product and service development
- Customer process mapping
- Web based systems in a service and behavioural perspective

By focusing on these theoretical areas, the study leads towards taking the customer perspective rather than the supplier perspective in the development of products and services in a web-based environment. The importance, in logistics research, of understanding changes in customer needs as well as identifying driving forces in customer value changes is emphasized, [71] as identified in the first literature study (appended paper 1). Furthermore there is an identified lack of empirical understanding of these customer value changes, and suggestions are provided for a qualitative theory-building approach in order to gain deeper understanding through interpreting and discovering knowledge of individuals.[72] Hence a deeper study of theory in customer value is chosen.

The study has focused on integrating customer needs into the development of e-business systems and a theoretical study of product development and service development has also been undertaken since the e-businesses in this study involve both products and services.

Based on the logistics evolution described above, the inter-firm behavioural aspects mentioned in the latter phase of the table are another area of interest in this study, especially when taking this reasoning one step further into a customer-firm

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[69] Stock, J.,(1997), *Applying theories from other disciplines to logistics,* International Journal of Logistics and Distribution Management, vol. 27

[70] Gummesson, E., (2000) *Relationsmarknadsföring från 4P till 30 R,* Liber ekonomi

[71] Flint, D. J. & Mentzer, J. T. (2000), *Logisticians as Marketers: Their Role when Customer Desired Value Changes*, Journal of Business Logistics, vol. 21, no. 2, pp. 19-41.

[72] Flint, D. J. & Mentzer, J. T. (2000), *Logisticians as Marketers: Their Role when Customer Desired Value Changes*, Journal of Business Logistics, vol. 21, no. 2, pp. 19-41.

relationship rather than an inter-firm relationship. The idea of mapping customers in order to gain better knowledge in the customer–firm relation[73] required a deeper theoretical base in customer process mapping; thus the inclusion of customer process mapping among the selected theories.

It is also found in the same literature study (appended paper 1) that empirical research on consumer behaviour in a virtual shopping environment is lacking, so the area of consumer behaviour and consumption in e-commerce is of interest for the study.[74]

The theoretical areas of interest to this study are found in different research disciplines. Some areas are predominantly found in business literature and marked yellow in Figure 8, while other areas are predominantly found in technical literature and are marked blue in Figure 8.

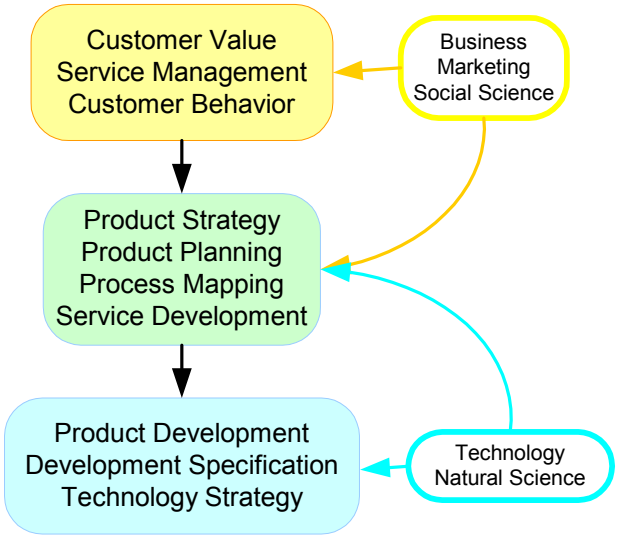

Figure 8: The placement of the theoretical areas in research and literature

This split between the different research areas is not at all strange, since business schools and technology schools focus on different areas of research. This accords with the functional or organizational split between business or marketing employees and, for example, technology or product development employees. The competencies in customer knowledge often derive from disciplines of marketing, business economics, customer behaviour, or other social science disciplines, while competencies in product development and technology, derive from technical disciplines.[75] The links to customer need identification seem to have been neglected in the latter however, where a problem-solving approach with the starting point in the problem itself, rather than in the need of customers, is common.

A research agenda has been provided by Parasuraman in the area of product or service development, where some research questions that stress the organizational

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[73] Champy, J. (2001) "New products of new processes?" Sales & Marketing Management, May 2001

[74] Tan Soo Jiuan 1999, *"Strategies for reducing consumers' risk aversion in Internet shopping"*, Journal of Consumer Marketing, vol. 16, no. 2, pp. 163-180.

[75] Deschamps, J-P, Nayak P. (1995), *Product Juggernauts,* Harvard Business School Press, Massachusetts, USA

deficiencies mentioned above are presented in the form of two gaps: *the market information gap* and *the service standards gap*.[76] The market information gap can be explained as the seller's incomplete or inaccurate knowledge of customers' expectations, while the service standard gaps can be explained as the seller's failure to translate these expectations into specifications. Enhanced organizational integration in the form of product and process development is required in order to respond to these identified gaps.[77] Furthermore, technology strategy and development need to be integrated with the functional organizations for customer understanding and customer value processing.

3.3 Customer value

The enhancement of end-customer value is identified as lying in the integration of supply chains, a field that is recognized in the logistics evolution model above. In the industrial economy, where each firm holds a position in a value chain, a traditional view of value is used.[78] In this view the firm adds value based on input from the upstream suppliers and transfers this value to the next actor in the value chain, i.e. the customer. In the traditional view of value, the end customer experiences a value of a product or service that is distributed sequentially from the different actors in the value chain.

Andersson et al.[79] have suggested that the value process be divided into three phases according to Figure 9. The three phases in that process are: understanding, creating and delivering value.

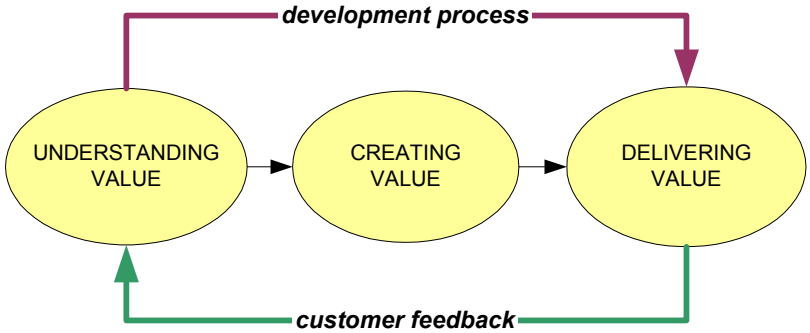

Figure 9: Part of value process modified from Andersson & Naurus

From a technological perspective the value process is where customer inputs from the understanding phase are transferred into the development process and translated into

[76] Parasuraman, A. (1998), *Customer service in business-to-business markets: an agenda for research,* Journal of Business and Industrial Marketing, vol 13, no. 4/5

[77] Graham, G. and Hardaker, G. (2000) *Supply Chain management across the Internet,* International Journal of Physical Distribution and Logistics Management, vol 30, no ¾ pp 286-295

[78] Normann, R. and Ramirez, R. (1993), *From value chain to value constellation: Designing Interactive Strategy,* Harvard Business Review, July-Aug 1993

[79] Andersson, J. & Naurus, J, (1998), *Business Market Management,* Prentice Hall, N.J

technical specifications for development in order to create products, systems or services that deliver value to the customer.

3.3.1 Understanding value

Seen from the business perspective the process of understanding value includes a market-sensing phase that is built up by market definition, identifying the competition, value assessment and, finally, customer feedback. [80] I will go into detail in the latter two areas, value assessment and customer satisfaction, since they relate to the main purpose of this study, where the focus is on the process of understanding customers' needs and what they value. The need of a customer is usually rooted in some kind of concern or problem experienced when using a product or a service. [81] These problems require solutions that are supposed to be created by developers of a firm.

The focal point of understanding customer value is what causes customers in the market to make their decisions about products or services. This can be visualised as in Figure 10.

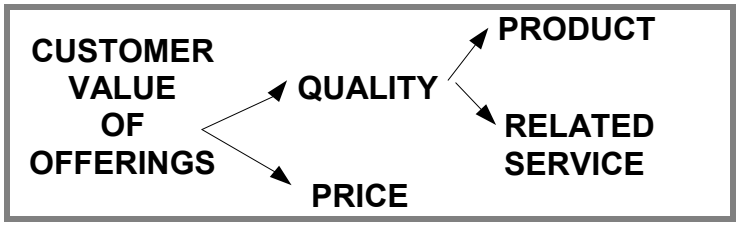

Figure 10: Customer-perceived value – model developed from Gale[82]

From the end-customer perspective, value is the measure of a product aligned with the related services.[83] This alignment, taken together with the price, constitutes a total offering that is experienced and evaluated by the end customer.

The customer goes through a process of evaluating an offering every time he/she is in the situation of needing a product or service. The process can be described in the following steps:[84]

1. Problem recognition, or need identification
2. Information search
3. Evaluation of alternatives
4. Purchase
5. Post-purchase evaluation

The described process can be a good starting point for mapping customer processes when trying to capture all the steps made by the customer prior to, during, and after the involvement with the supplier.

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[80] Andersson, J. & Naurus, J, (1998), *Business Market Management,* Prentice Hall, N.J
[81] Grönroos, C. (2000), *Service Management and Marketing,* Wiley & Sons Ltd
[82] Gale, B. T. (1994), *Managing Customer Value* The Free Press N.Y.
[83] Bowersox, D.J., Closs, D.J & Stank, T. *Ten Mega Trends that will revolutionize supply chain logistics,* Supply Chain Management
[84] Rowley, J. (1997), *Focusing on customers,* Library review, vol 46, no2

3.3.1.1 Value assessment

In the process of understanding customer value, several methods for value assessment have been practiced by companies. Some of these methods are briefly described by Andersson et al. and can be summarised as[85]:

- *Internal engineering assessment:* Internal laboratory tests on new products in order to assess a value
- *Field value-in-use assessment:* Supplier conducts interviews and gathers data at customer firms in order to create a list of cost elements and benefits associated with the provided offering and comparing them to the next best alternative. Process mapping is sometimes used in this method, but mainly to study the costs imposed by the customer in every step of the purchasing process for emergency purchases.
- *Indirect survey questions:* Participating customers answer questions about the effects of some changes in a provided offering.
- *Focus-group value assessment:* Participants in a group are exposed to product offerings or concepts and are asked what value these might imply for their firms.
- *Direct survey questions:* A description of an offering or concept is given to participants who are supposed to estimate the value to their firm in monetary terms
- *Conjoint analysis:* Statistically transforms participants' perceived value of an offering or product concept.
- *Benchmarks:* Participants are asked to compare an offering or concept with an industry standard and to judge how much more their firm is willing to pay for such an offering or concept.
- *Compositional approach:* Participants are asked to place a value, in monetary terms, on self-selected attributes that are added to an offering or product.
- *Importance ratings:* Participants are supposed to rate a list of attributes based on the relative importance to their firm

All of the above-mentioned methods are used in the product or service development process, where either new attributes or completely new products or offerings are developed. The methods use input from customers predominantly through exposing them to the suggested concept or offering and then asking them to value these changes or new developments. All the above methods are based on a developed product or on a suggested concept. This will help suppliers to get an idea of how their ideas will create value to them. These value assessment methods all reactively respond to how customers judge new concepts or developments, since they all base the

[85] Andersson, J. & Naurus, J, (1998), *Business Market Management,* Prentice Hall, N.J

evaluation on already existing ideas and developments. Through prototypes or dummies the firms ask customers for opinions in order to achieve suggestions for improvement or changes prior to launching newly developed concepts.

The field value-in-use assessment method touches upon process mapping of the customer process, although only in the purchase process of an emergency product and with the aim of assigning monetary terms to each step. The field value-in-use assessment method is a good starting point based on customer processes which, if taken further, can be developed into a method of understanding customer concerns beyond just monetary value.

3.3.1.2 Customer feedback

In terms of customer feedback, Andersson et al.[86] include the elements of customer satisfaction measurement, return on quality and customer value analysis. A supplier can evaluate how well they have been able to fulfil customer needs in their offerings by gaining customer feedback. Customer satisfaction, an often-used method, represents a cumulative evaluation of an offering. This is a comprehensive measure that indicates to what extent an offering succeeds or fails; it is also a measure of the offering in comparison to the customers' ideal offering in that category. However, some criticism worth mentioning has been made of the customer satisfaction measure because it excludes the input to a company from non-customers who are buying competitors' offerings, and also because it usually does not measure the offering in comparison to the competitor offerings.[87] Many companies use customer satisfaction, including the case companies of this study. However, cognizant of the above-mentioned weaknesses, customer satisfaction should be used as an input complemented with additional data in order to facilitate a comprehensive analysis.

The return on quality can be expressed as the ratio of the net present value of the profit stream for a quality improvement initiative to the net present value of the additional spending on the initiative.[88] In such analysis the input from customer surveys must be modified into quantitative quality measures (hence quantified) in order to create the calculation. This method is based on monetary value only and does not consider other qualitative input from customers. Past research, however, has shown that service quality has a direct positive correlation with retaining and servicing customers, thus identifying other preferred measures based on qualitative input.[89]

3.3.2 Creating value

According to Grönroos, Ulaga among others, value creation can be seen from three different perspectives. The most traditional approach has been how suppliers create value for their customers and how customers perceive the supplier offering value in

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[86] Andersson, J. & Naurus, J, (1998), *Business Market Management,* Prentice Hall, N.J
[87] Gale, B. T. (1994), *Managing Customer Value* The Free Press N.Y.
[88] Andersson, J. & Naurus, J, (1998), *Business Market Management,* Prentice Hall, N.J
[89] Andersson, J. & Naurus, J, (1998), *Business Market Management,* Prentice Hall, N.J

relation to the offerings of the competition. This perspective typically represents the technology push, where the customer's perception is not recognised until the product is developed. This perspective also represents the organisational gap identified earlier, where the supplier fails to translate customer expectations into specifications; thus the interaction between customers and developers is limited. This perspective can be illustrated as the exchange or transactional perspective referred to by Grönroos[90], where value is created by the firm embedded in a product and distributed to customers at the point of transaction.

Recently, the emphasis on considering customers as the key asset to firms has generated a second perspective on customer value creation, that of attracting, developing and retaining customers through products and services. This perspective focuses on how customer value can be created through supplier relationships, where several suppliers together create a single source offering to the customer. The second perspective evolves into a third perspective, where business markets of today become organised in networks that use joint value creation between buyer and seller.[91] This third perspective is also referred to by Grönroos[92] as the relationship perspective, where customer value is created through relationships. Value in this third perspective is not embedded in a product. Products are rather seen as facilitators of value, where the value is created in a value creating process generated by customers in relationship with the supplier.

In the value creation process represented by the three perspectives, the focus on the second customer perspective and the third perspective of supplier and customer relationship will be stressed and further explored in this study. The supplier involvement in customer processes is considered a proactive way of understanding their customers' needs and, through that understanding, being able to translate the needs into specifications for development of offerings that provide a value to the customers. One can argue that each customer or end user can be considered a mini-business together with whom suppliers must work in order to create value for them.[93]

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[90] Grönroos, C. (2000), *Service Management and Marketing,* Wiley & Sons Ltd

[91] Ulaga, W. & Chacour, S. (2001), *Measuring customer perceived value in business markets*, Industrial Marketing Management, 30, 525-540

[92] Grönroos, C. (2000), *Service Management and Marketing,* Wiley & Sons Ltd.

[93] Mitchell, A (2001) *Extending ECR to the consumer,* ECR Journal vol 1 no 1

The three perspectives can be visualised as by Ulaga[94] (Figure 11)

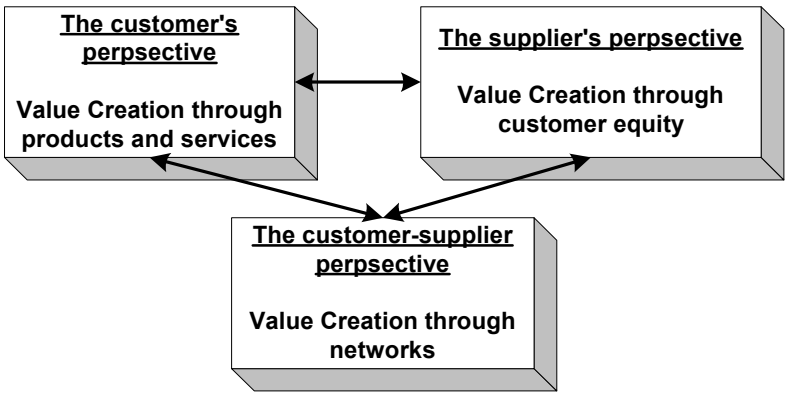

Figure 11: Three value perspectives modified from model by Ulaga

3.3.3 Delivering value

According to Bowersox et al.[95] delivered end-customer value can be divided into three parts: economic value, market value and finally relevancy value. The economic value of low price and the market value of assortment and convenience to end customers have historically driven supply chain success. However, lately the relevance value has started to be recognized, where the goal is to accommodate the lifestyle and business of the customer, and to provide a diversity of choice that relates to customer needs. Products and services must be redesigned into offering solutions that are relevant in taking care of customer concerns. The delivered value of such an offering can be evaluated through inputs from customers about how they experience the product or service. In addition, input about what attributes and benefits the customer seeks and considers relevant as solutions to his/her concerns can be used.[96]

The value process will be more easily assessed through close customer relationship.[97] If it is hard to build close relations with customers, as can be the case with consumers generally, a firm must acquire the best possible knowledge in order to understand how the customer process is set up, and to further translate this knowledge into specifications in order to avoid misinterpretations of customer needs in the development process. This customer knowledge has to be integrated in the technology strategy, product development and planning; thus to competencies in the firm that are able to obtain customer understanding and transfer it into the development process are crucial in the value delivery process.

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[94] Ulaga, W. & Chacour, S. (2001), *Measuring customer perceived value in business markets*, Industrial Marketing Management, 30, 525-540

[95] Bowersox, D.J., Closs, D.J & Stank, T., (1996) *Ten Mega Trends that will revolutionize supply chain logistics,* Supply Chain Management

[96] Mentzer, J., Rutner, S. and Matsuno, K. (1997) *Application of means-end-value hierarchy model to understanding logistics service value,* International Journal of Physical and Distribution Logistics

[97] Normann, R. and Ramirez, R. (1993) *from value chain to value constellation: Designing Interactive Strategy,* Harvard Business Review, July-Aug 1993

3.4 Product and service development

Suppliers' incomplete or inaccurate knowledge of customer service expectations causes problems in providing quality as customers perceive it. [98] As competition increases, it is important for suppliers to understand their customers' needs beyond the requirements on core, basic products and services.

3.4.1 Products, services and service offerings

In order to distinguish oneself on the service market, the process of creating and delivering a value to customers must align a service to the delivered product or augment core services with supplementary services. That means that a product can be considered a service if the seller customises the solution to fulfil the demands of the customer in such a way that the product is seen as a system built up of the product itself together with the accompanying service.[99] A service is a number of activities provided to a customer in order to add value to a product or to a basic service; hence services should be considered as processes. The nature of a service process is that it interacts with the process of the customer in the way that it creates a solution to a customer's problem.[100] Grönroos identifies three basic characteristics of a service:[101]

1. Services are processes consisting of activities or a series of activities rather than things.
2. Services are at least to some extent produced and consumed simultaneously
3. The customer participates in the service production process at least to some extent

A service offering can be defined as a customer relationship that goes beyond transactions of goods and basic services, so that for example product information, delivery, installation, updating, maintenance etc. are included as part of what the customer achieves.[102] In order to stay competitive and to differentiate themselves, companies constantly augment their core offerings with supplementary services like consulting, training, product and service enhancement.[103]

The new competitive situation on a market involves competing on service management, i.e. companies have to provide service offerings that solve customer problems in the outcome of existing products and services. A service offering includes service production and service delivery, thus it demands a holistic customer approach with close relations to customers. Suppliers need to enhance their relationship to

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[98] Parasuraman, A. (1998), *Customer service in business-to-business markets: an agenda for research,* Journal of Business and Industrial Marketing, vol 13, no. 4/5

[99] Grönroos, C. (2000), *Service Management and Marketing,* Wiley & Sons Ltd.

[100] Grönroos, C. (2000), *Service Management and Marketing,* Wiley & Sons Ltd

[101] Grönroos, C. (2000), *Service Management and Marketing,* Wiley & Sons Ltd

[102] Grönroos, C. (2000), *Service Management and Marketing,* Wiley & Sons Ltd

[103] Parasuraman, A. (1998), *Customer service in business-to-business markets: an agenda for research,* Journal of Business and Industrial Marketing, vol 13, no. 4/5

customers on a strategic level, and develop customer-oriented service-systems on a tactical level.[104]

3.4.2 Service in a process context

The fact that the customer is present in the service process to a certain degree, as mentioned before, means that the customer perceives how the process functions at the same time as it develops, as in Figure 12.

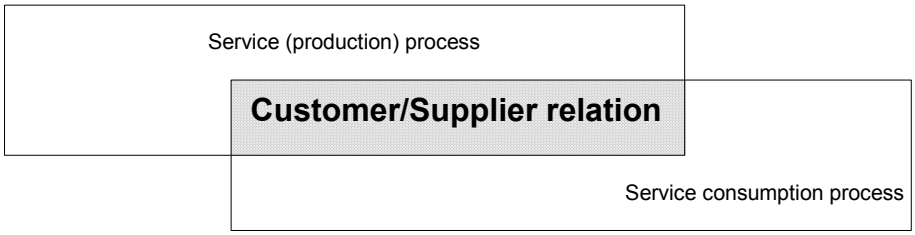

Figure 12: The overlapping of service production and service consumption processes modified from Grönroos' model

The consumption of the service process is a critical part of the service experience, and the service quality can be measured as the gap between customers' perceptions and expectations. The perceived value and quality of a service are not determined by the service offering alone; the way the service process is perceived also becomes part of the service offering. [105] Customer evaluations that are based on the outcome of a product or service should therefore be combined with the process associated with the offering. [106] Hence the process-related elements must be included in a service offering. Customers can experience service perception every time they take part in a service process where they interact with employees, physical resources, technologies and systems of the service provider. In order to handle the whole service process, suppliers need to look upon their organisation from a process management perspective and establish partnerships and networks on a strategic level. Furthermore, suppliers need to obtain increased knowledge of their customers' processes, as related to their offerings.

3.5 Customer process mapping

As already described in the methodology chapter, a customer process is a process where customer value and results seen from a customer perspective are achieved. However, Rummler et al.[107] have established that customers are often left out when managers are asked to describe their organization. Through processes it can be shown how work gets done across functional boundaries, and furthermore how the internal relationship between suppliers and customers can be elucidated. Subsequent improvements of process mapping benefits will occur when the redesign of the

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[104] Grönroos, C. (2000), *Service Management and Marketing,* Wiley & Sons Ltd
[105] Grönroos, C. (2000), *Service Management and Marketing,* Wiley & Sons Ltd
[106] Parasuraman, A. (1998), *Customer service in business-to-business markets: an agenda for research,* Journal of Business and Industrial Marketing, vol 13, no. 4/5
[107]Rummler, G.A. & Brache, A.P. (1995) "Improving performance – how to manage the white space on the organization chart", 2nd edition, Jossey-Bass Publishers

processes links companies to their customers.[108] This stresses the method of mapping and evaluating the customer's process rather than the internal business processes. However, there is an identified lack of research on consumer and customer process mapping, especially when the interrelated process maps over functional boundaries are concerned. The links to customers are often presented on internal business process maps, while inter-functional process maps with their basis and starting point in a consumer or customer process are more rare. From the customers' perspective the utilisation of a product or a service is at the core of the consumption process.[109] Based on identified problems in that mapped consumption process, a better understanding of customer needs will be achieved.

Some researchers in the field of service management have, however, started service mapping where the behaviour and the perception of the service situation receive the focus[110], and the customers' behaviour forms the basis of the process. Joining Champy,[111] and contrary to many researchers in the field of process mapping, Gummesson[112] also stresses the importance of starting from the customer process, rather than from the internal business processes. However, usually only the steps in the current service situation have been mapped in the service process. These steps of a basic service consumption phase are described by Grönroos as:[113]

- The joining phase – where the customer contacts the supplier in order to buy or consume a service
- The main consumption phase – where the needs of the customer must be satisfied and the core services takes place
- The detachment phase – where the customer leaves the service phase.

In the above-mentioned steps, only the basic service is considered, and issues like accessibility, interaction and customer participation are neglected, [114] as well as the steps prior to the joining phase and after the detachment phase, as described in the customer process on page 25.

3.6 Web based systems

The Internet can be seen as a service and relationship oriented medium, which can be used as one way of introducing customer service systems. According to Porter,[115] the new web technology is considered as an enabler to companies in positioning their strategy, and as a complementary way to compete. One major advantage of the Internet is the ability to link activities together, and to provide real-time data from an

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[108] Champy, J. (2001) "New products of new processes?" Sales & Marketing Management, May 2001
[109] Warde, A., McMeekin, A., Randles, S. Southerton, D. and Tether, B., (2001), *Economic integration and practical consumption: some theoretical considerations,* Paper for European Sociological Association Conference, Helsinki 2001
[110] Gummesson, E. (2000) "Relationsmarknadsföring: från 4P till 30R", Liber Ekonom
[111] Champy, J. (2001) "New products of new processes?" Sales & Marketing Management, May 2001
[112] Gummesson, E. (2000) "Relationsmarknadsföring: från 4P till 30R", Liber Ekonom
[113] Grönroos, C. (2000), *Service Management and Marketing,* Wiley & Sons Ltd
[114] Ibid.
[115] Porter M. E. (2001) "Strategy and the Internet", *Harvard Business Review*, March 2001

activity in such a way that is becomes widely available internally as well as among suppliers and customers.[116]

3.6.1 Definitions

Before elaborating further on web based systems some definitions provided by CLM[117,118] are presented in order to distinguish between different words used in the new virtual business environment.

E-business *is the continuous optimisation of an organization's value proposition and value-chain position, using the digitally connected marketplace and technologies of the Internet as the primary communications medium.*

E-commerce *is a critical component of supply chain management that includes the conduct of any business transaction using digital rather than physical means.*

The Internet *is the public forum, a relatively inexpensive communication network, where supply chain partners can share valuable data and marketplaces can be conducted.*

The intranet *is a private and privileged communications network, where a nucleus organization and its internal constituents are given digital access to private information to better add value to supply chain processing.*

In this thesis, the definition of *e-business* is the most appropriate to use for the web-based systems described in the cases of this study, where the intention is to create value to the users based on digitally connected marketplaces. In the first case, Tetra Pak is using an intranet for their marketplace, while the pharmacy in the second case uses the Internet. The marketplace at Tetra Pak, however, is developed in such a way that it can be applied on the Internet as well. The web-based system in that case corresponds better to the definition of e-business than the one of e-commerce, even though the system is built in an intranet environment.

3.6.2 Web-based systems involve service

The Internet can be seen as a medium for service process development. Physical goods or services that are provided in e-businesses can be characterised as services,[119] since a service addition in terms of supplementary service to a product or a basic service is created in web-based business systems. Supplementary services in terms of virtual product information, delivery information, order confirmations etcetera will be added to the product, and thus a package consisting of both product and an aligned service will be described in a service offering. Through service alignment, web-based systems may give the supplier more time for creating and managing customer relationships, as a result of less time spent on queries and administrative work.

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[116] Porter M. E. (2001) "Strategy and the Internet", *Harvard Business Review*, March 2001

[117] CLM is Council of Logistics Management

[118] Bauer, M.J., Poirier, C.C., CSC, Lawrence, L., Bermudez, J. AMR Research, (2001), *e-businesses: The Strategic Impact on Supply Chain and Logistics,* CLM, USA

[119] Grönroos, Heinonen, Isoneimi, K., & Lindholm, M, (2000) *The NetOffer model: a case example from the virtual marketplace,* Management Decision, 38/4 243-252

Porter[120] has established that customers will gain increased power in the new channel, which means that on-line products and services must demonstrate that they provide real benefits, thus fulfilling the need of the customer. Services provided in the new channel must be augmented with supplementary services to increase the value to customers and to attract them to the new channel; otherwise they will probably stay in the traditional channel or align themselves to competitor web sites. It is, however, important to realize that the increased value must be relevant to the customer; thus it is important to avoid the risk of applying knowledge about customer needs from traditional businesses directly into new e-business systems, since these needs probably differ.[121] Hence it is important to gain knowledge about the customer processes involved when using web-based systems, in order to identify the specific needs in that channel and to be able to develop services with the relevant value.

3.6.3 Customers, consumers and end users

Customers are present at every step along a supply chain. However, at the end of a supply chain appears the consumers or end users, who realise the value of the products and services in their experience of quality of life. By adopting a customer perspective, as in this thesis, the approach is from the demand side in any customer/supplier relation. The research has focused on the end user in the supply chain i.e. the consumer, which in this work can be defined as a person who orders and/or consumes/uses a product or a service. The consumer or end user is seen as a customer to the supplier, why the word customer is used throughout the thesis, for the individuals who are taking ownership of and also using the delivered products or services.

In terms of customers in an e-business context, it has been established that Swedish Internet access is unevenly spread among different user groups, [122] which confirms that customers must be viewed in segments rather than as one group. It is recognized that the difference among different user groups is more pronounced in terms of regular use than in terms of Internet access. While the Internet access is more evenly spread, the polarisation between users and non-users is increasing.[123] One explicit gap is that the differences in Internet usage between younger and older people tend to increase, while differences between different social groups are decreasing.

3.6.4 The consumption process in a web environment

A thorough understanding of consumption processes is essential in order to comprehend the demand of customers or different users, especially in the new web-based environment described in this study.[124] Furthermore it has been identified as

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[120] Porter M. E. (2001) "Strategy and the Internet", *Harvard Business Review*, March 2001
[121] Mitchell, A., (2001) *Extending ECR to the consumer,* ECR journal vol 1, no 1
[122] Bergström, A (2000), *Internet – från revolution till vardagsanvändning,* Land du välsignade, Grafikerna Livréna, Kungälv
[123] Bergström, A (2000), *Internet – från revolution till vardagsanvändning,* Land du välsignade, Grafikerna Livréna, Kungälv
[124] Warde, A., McMeekin, A., Randles, S. Southerton, D. and Tether, B., (2001), *Economic integration and practical consumption: some theoretical considerations,* Paper for European Sociological Association Conference, Helsinki 2001

important to distinguish customer demand and consumption in such a way that consumption refers to a much broader set of social practices where people utilise a service or a product that is only sometimes acquired by purchase, while demand rather concerns suppliers in the market and their possibility of commodity exchange.[125] One such example of a non-purchased consumption can be obtaining information from a web-based market place.

Davenport stresses the importance of identifying needed process changes prior to building new systems that are to support the processes involved, as is in the case of the development of the web-based systems in this study.[126] From the supplier perspective the Internet provides the advantage of revealing the customer process when the customer buys a product from the web system, but in order to identify the need the steps prior to buying products on the web must also need be determined, as well as the steps in consumption

[125] Warde, A., McMeekin, A., Randles, S. Southerton, D. and Tether, B., (2001), *Economic integration and practical consumption: some theoretical considerations,* Paper for European Sociological Association Conference, Helsinki 2001

[126] Davenport, T., (1995), *Business process reengineering, its past, present and possible future,* Harvard Business School Publishing, Boston Massachusetts.

4 THE TETRA PAK BUSINESS SUPPORT CASE

4.1 The selection of case company in the first study

Based on the research purpose of understanding customer needs when developing and establishing web-systems, it was desirable to find a company that was just about to develop a web-based system that included e-business to customers. It was also important to find a case where the system was well defined and where I was allowed to get involved in the process of development. The reason for a case study of the establishment of an e-business system was to examine the needs of different actors, and to identify gaps in expectations between these different actors. The selected system of study should fulfil the case selection criteria presented in the methodology section. Those criteria are:

- New development of a web-based e-business solution, where the research can follow the process of development.
- The implementation of the web system should be as an additional channel to already existing business, in order to study the effects of the introduction in relation to the whole system already in place.
- The web-based system should include a commercial part where products and/or services are sold to end users.
- Accessible secondary data from customer surveys and internal investigations (beneficial but not necessary).
- Permission to be involved as an active researcher through participation in meetings, conducting observations and continuous discussions.

All the above criteria were fulfilled in the case selected at Tetra Pak. One advantage of this case is that it is a well-defined system, where the customers are easy to identify and to follow over time. Secondly, the introduction of the e-channel in combination with customer-oriented organisational intentions made the case interesting and suitable. Not decisive in the case selection, but certainly advantageous, was the openness of the employees and the management team of the company in their willingness to share information, provide deep insights, and involve me as an active researcher in their process of establishing the electronic enterprise system.

4.2 Tetra Pak Business Support; the company studied

Tetra Pak Business Support AB, the case company of this study, is an in-house service provider and part of the Tetra Pak Corporation. Tetra Pak sells packaging and processing solutions for the global liquid food market, and has 77 market companies around the world selling Tetra Pak products in more than 165 markets. Tetra Pak has 59 packaging material plants including licensees, and 12 packaging machine assembly

factories for production of their systems and products. The company has 20 150 employees and achieved a net sale of 7.6 billion EURO in 2001.[127]

Tetra Pak Business Support AB is the internal service provider within the global Tetra Pak Corporation. Tetra Pak Business Support AB has 200 employees, and had a turnover of 400 million SEK in year 2000. In that year, Tetra Pak Business Support AB was re-launched under this new name. (The old name was Tetra Pak Bolagsservice AB.) Simultaneously with the introduction of the new company name, the new vision "We make it easier" was launched with the aim of clarifying the new focus on making things easier for their customers.

At present Tetra Pak Business Support AB provides different services to twenty Tetra Pak companies located in Lund. These companies have about 3600 employees all together. The services provided by Tetra Pak Business Support AB are such as are needed by the companies and their employees within the multinational corporation, services that are considered to be outside the core business of each company, such as telephone service, housing service, conference service, administration, transportation, catering etc.

The table presents some facts from the year 2000 about services provided by the company to their customers in Lund.

Table 2:Facts of subsidiary

Type of service	**Amount/year**
Mailed letters	547 000
Goods consignments	6 816
Served lunches in canteen	352 041
Office transfers	791
Paid salaries	50 089
Fire detectors maintained	10 000
Maintained property area m^2	260 000

The global Tetra Pak Corporation, like many other multinational corporations, has gone through an evolution of different types of organisations since the early 80s that have led to implications for the internal service company. In the early 90s, when the provider of internal service became organised as a separate company within the multinational corporation, it was divided into five functional departments: computers & network, properties, information, internal services and canteen services. The employees of this organisation had a clerical background rather than a sales and service oriented background.

The adaptation within the company to the corporate management changes has followed a pattern that can be described as in Table 3.

[127] www.tetrapak.com

Table 3: Organisational evolution of internal service within global corporation

Period	Corporation orientation to organisation	Service providing organisation	4.2.1.1.1.1.1 Drivers	Internal organisation
1980	Hierarchical oriented	Staff	Cost	Free utilities
1985	Internal buy-sell oriented	Division	JIT/TQM	Production based
1990	Process oriented	Independent Subsidiary	TTM / BPR	Product based/ process based
2000 -->	Customer oriented	Outsourced/Joint ownership Virtual organisation	Customer need, CRM	Offerings Customer oriented

* For abbreviations see references chapter.

In 1999 Tetra Pak Business Support AB (at that time named Tetra Pak Bolagsservice AB) replaced its managing director. New visionary management opened the way for dramatic progress and evolution of the service company.

With the entrance of the new manager, the following issues were raised, based mainly on the weaknesses identified in a SWOT analysis of the company[128]

- Good performance in some parts of the organisation
- Indistinct products
- Customers[129] don't know what we offer
- Customers don't know whom to contact
- We don't know what customers need
- Uneven deliveries
- Uncertain delivery times
- Lack of follow up
- Lack of trust among customers

With these concerns in mind, four targets were set with a great challenge to "productify" services and to create an organisation focused on customers rather than on functions.

- Our customers shall know what they will get and be satisfied.
- We will work efficiently.
- We will bring the service company up the value ladder with distinct offerings[130].
- We will create opportunities for the employees to develop and increase their self-esteem.

[128] Andersson- Lehn, E. *Developing an internal service organisation into becoming better than the business* Internal document

[129] A customer is an employee of any company within the multinational corporation that orders and consumes a good or a service from the service-providing Tetra Pak Business Support AB, i.e. the end user

[130] Internal document, "Future Way of Working"

4.3 The case study within the company

The empirical input to this research has been carried out as a qualitative case study at Tetra Pak Business Support during one year, encompassing the web system project from development, through the first introduction and subsequent evaluation period, to the next re-launch one year after the first introduction.

The purpose of the case study has been twofold, firstly to identify gaps in expectations between the supplier of the web-based system and Tetra Pak Business Support as the buyer, and secondly to identify gaps in expectations between customers of Tetra Pak Business Support and the employees or internal users of the web system. The case has accordingly been divided into two case units, case unit 1 and case unit 2, as presented in Figure 13.

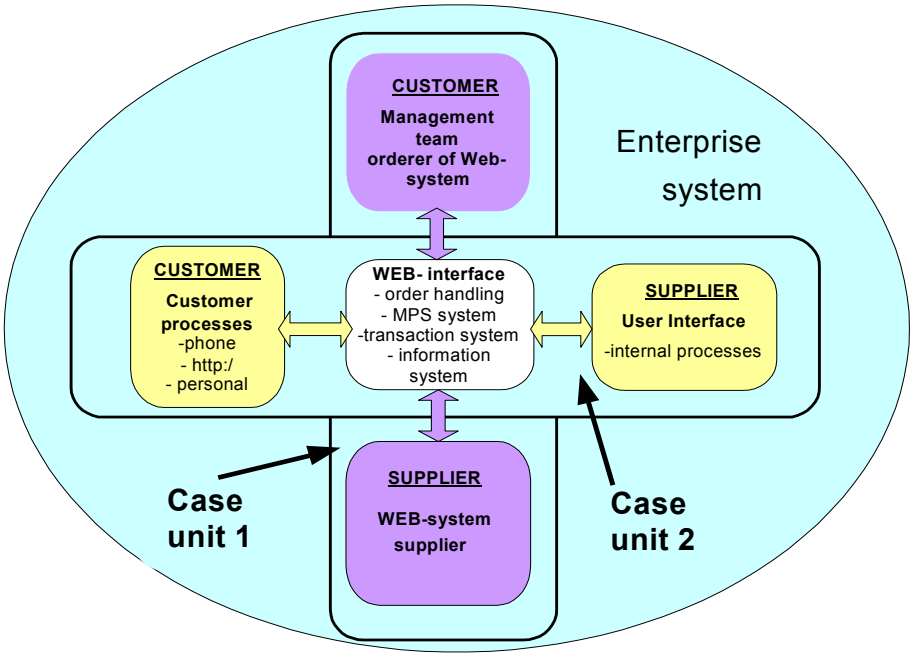

Figure 13: The processes in this study

In the first case unit, a qualitative study based on nine in-depth interviews was carried out in order to identify gaps in the expectations between the web system supplier and the customer, i.e. the management team of Tetra Pak Business Support. The interviews (approximately one hour each) were taped and transcribed verbatim prior to the analysis. Five members of the Tetra Pak Business Support management team and two representatives of the supplier's management were interviewed, as well as one external consultant acting as project leader for implementation of the web system, and one representative from a web advertising agency. A table of the interviewees and the interview guide are presented in Appendixes A and B.

In the second case unit, a qualitative study based on 19 interviews with ten customers and nine internal users (as presented in Appendix A), was carried out in order to identify the needs of the company customers, and furthermore to identify the gaps in expectations between the customers and the executers within the internal service-providing company.

A customer in case unit 2 is an employee of any company within the multinational corporation that orders and consumes a good or a service from the service-providing Tetra Pak Business Support AB. This business customer can be treated as a consumer/end user in the sense that the actual person who puts the order into the e-business place consumes the goods or service as a personal aid in the daily work, but can be distinguished from a typical consumer in the sense that they make purchases from the monetary resources of their company, not from private resources. In the systems there are also other types of customers who have different roles in the relationship with Tetra Pak Business Support as a supplier.

The different categories of customers can be called:

- Primary customers (as described above) – users of the system, and consumers of the products and services provided
- Influencers – customers with previous experience of the supplier or the system
- Deciders – customers who decide to use the supplier and to purchase from them.

Input from all these categories has been taken into account in the study.

The analysis has aimed at elaborating on methods and models for value creation in the process of bridging the gaps identified in the case units. The intention is to develop a model for considering customer needs by identifying existing gaps between different actors around the web system, in order to specify new developments.

4.3.1 The web based business system

During the process of transforming the company into a customer-focused organisation with the vision "we make it easier", the creation of the web-based system was started in collaboration with a supplier of web based solutions. The supplier of the web-based system had derived broad experience in developing such systems from former projects. Additionally, they claimed to have broad experience in integrating customer needs in the requirement specification. Prior to entering into this specific project they had a list of reliable references with large Swedish companies like Ericsson, IKEA and Telia.

The web-based system at Tetra Pak Business Support, was created in order to establish ***one*** system in which information handling, order handling, invoicing, production management (internal) as well as customer profiles, customised agreements, and product information from a customer point of view were gathered.

Prior to the introduction, a customer satisfaction survey indicated that 39,6% of the customers preferred to obtain information from the service provider through the intranet, while 51,4 % preferred to be informed through a recurrent newsletter.

The intention of the web-based system was to create a new e-business channel for customers while simultaneously creating an enterprise business system for the company. The company sorted the whole product portfolio into six "offerings" to make it more easily accessible by customers and employees. The six offerings are:

- **Meeting Services -** helps customers with all the practical details involved in meetings and conferences – from booking premises and providing food and drink to full responsibility for complete arrangements.
- **Transport Services -** handles all customer goods and passenger transportation – from post and shipping to rental cars and maintenance of service vehicles.
- **Human Resources Services -** provides individual and organisational support in work-related matters – from ensuring that salaries are paid to complete responsibility for companies' employee issues. (Hire/Fire/Retire)
- **Properties -** takes care of customer buildings, offices and their environment – from cleaning and maintenance to helping to create new, flexible workplaces.
- **Office Support -** ensures that customers enjoy an effective workplace – from helping with removals to selecting the right equipment and interior fixtures and fittings.
- **Administration Services -** is currently under evaluation and will most likely be replaced by another offering or withdrawn. The idea behind this offering was to offer support to financial functions.

These offerings are clearly visualised to the user of the web system as presented in Figure 14. Information about all products can be found in product leaflets under the web-based system.

Figure 14: The offerings displayed at the web site

One year after introduction of the new offerings, the familiarity with the different offerings was identified in the customer satisfaction survey. Figure 15 shows that the offerings are well known to the customers, and that the two strategically most important offerings, the properties and the office support, have high recognition among customers. The highest ranked offering is the meeting services. This was the first offering exposed in the new web-based channel.

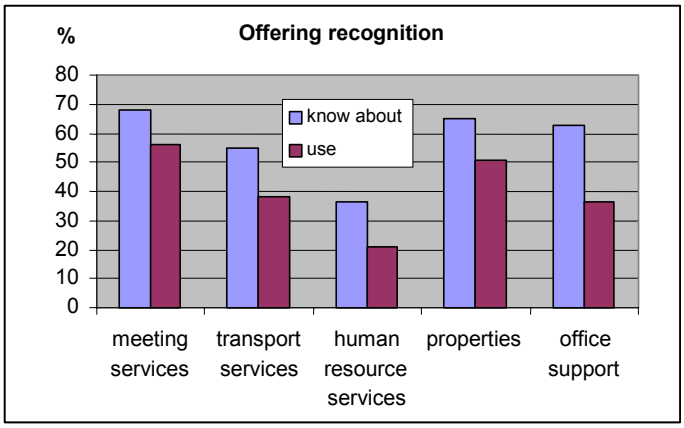

Figure 15: Offering recognition among customers (source: Internal Customer Satisfaction Measure 2001)

4.3.1.1 Customers' and internal users' computer experience

An initial study showed that all interviewees, customers as well as internal users, use computers in their daily work. However, the use of the Internet and the intranet is more advanced among the customers of the company than among the company employees, as shown in Table 4.

Table 4: Customer computer experience

	Computer use at work	Intranet use at work	Internet use at work	Private use of e-commerce	Private use of e-banking
Customers/end users					
Always/daily	11	9	5	0	0
Frequent/Weekly	0	2	3	1	3
Occasionally/monthly	0	0	1	4	6
Never	0	0	2	6	2
Employees/ internal users					
Always/daily	8	2	1	0	0
Frequent/Weekly	0	1	1	1	1
Occasionally/monthly	0	4	2	4	1
Never	0	0	3	2	5

From this it can be concluded that the customers are familiar with the new channel, which is confirmed in the customer satisfaction survey where 86% recognise the intranet as one way to contact the service provider. This might imply that the customers will expect the service provider employees to be equally knowledgeable, since it is the service provider who drives the development of the web-based system.

4.3.1.2 Customer opinions

The major results from the interviews show that the customers are open to and in some cases positive to a web-based system for services from the company, when it comes to orders of standardised single items. However, personal contacts and customised solutions are required when ordering projects or larger service packages, like an office removal or rebuilding. In the customer satisfaction assessment in

December 2001, the customers stress the importance of maintaining personal contacts. The conclusion is that the strategy of introducing e-business as a complementary channel[131] is advisable also in this specific case.

The typical customer is positive to the effect of finding product data gathered at one location, and indicates future expectations on transparent systems where the order can be followed from point of order to point of delivery. The customers all agree to the advantage of getting order confirmations through e-mail from the web system, which increases the perception of trust. The customer satisfaction survey also identifies a customer desire for electronic invoicing, since the existing invoicing system is complex and hard to understand and thus does not fulfil the customers' need. The advantage to the supplier of providing information to its customers in order to add value, as stressed by Porter[132], can be further enhanced through interactive information such as invoicing and order confirmations via the intranet. Through this kind of interactive information, value can be added that is lacking in the traditional channel to customers.

One disadvantage mentioned by the customers is that the system is too complicated, especially in the first attempt to place an order. Furthermore it is indicated in the customer satisfaction survey that the web site is hard to read and hard to utilise in the search function. There is an identified risk that the complexity drives the customer to stay with the more convenient channels of direct contacts or telephone orders. Furthermore, the system complexity influences the perception of confidence negatively. In fact, at the introduction of the new web system, the customer sees more value added to the supplying company than to themselves as customers of the web system. It is, however, argued by some customers that it may be perceived as more positive after progress on a personal learning curve. These disadvantages can be derived from the fact that the system has been developed with a basis in the internal business processes, with the intention of making these processes customer oriented. However, the system nevertheless fails to consider the needs of the customers when they use this complementary channel for commerce.

4.3.1.3 Service provider's internal opinion

The internal order handlers and employees of the service company responsible for fulfilment of the purchased services are also in the very initial steps of their learning curve, and their acceptance to the system is rather weak. The main reasons are that they seem satisfied with existing systems, thus reluctant to transfer into something new and unfamiliar. There is, however, a driving force of learning and accepting the system: it may reduce administrative work if the customers themselves put the orders into the system, and also reduce the work of multiple inputs into different subsystems. One major concern is that there has been a lack of information and education about the system inside the company, and thus the perception of confidence to the system is

[131] Porter, M. Strategy and the Internet, Harvard Business Review, 2001
[132] Porter, M. Strategy and the Internet, Harvard Business Review, 2001

low. Another concern is t the system's inability to handle short deadlines. At present, orders cannot be put into the system unless delivery is expected no sooner than two hours later. This makes it impossible to use the system efficiently for sudden requests for services like facility ad hoc maintenance or urgent deliveries of goods.

It is shown in the interviews with the management team, that on the strategic level in the company, there is a much higher level of trust in the system and the advantages that can be achieved through transparency, efficiency, and added customer value.

The major risks seen by management are the possibility that the customers will reject the system as a potential channel into the company, and also that the system itself will not change attitudes and service levels among the employees. The implementation of the web-based system has implied a customer-oriented reorganisation of the company entailing different roles, among them the role of being responsible to the customer. It is interesting to note that the management level of the company argue that they have 20 customers, which corresponds to the number of sister companies in the corporation, rather than considering the 3600 employees of these customer companies as customers. However, that opinion has gradually been changed during the course of this study, since it was identified as beneficial to regard different end users in different ways depending on what segment they belonged to. In that way user specific value could be developed.

The management considered the development of the web-based business system as an introduction of a complementary channel to their customers. Furthermore the web system should serve as an enabler for creating clarity in internal business processes and business models, as well as symbolising a unity of the company apart from the former functionally divided organisation. All in all, the web system should work as a complete business system customised for the service provider, including information handling, trade, order handling, invoicing and production management from an internal point of view and trade, customer profiles, customized agreements and product information from a customer point of view. Despite the idea of generating internal business process relevant to the new channel and with a customer orientation, the value process could be enhanced if the process mapping started in the customers' processes rather than in the internal business processes.

4.3.1.4 Opinions from the web system supplier

Contrary to the service provider (in this relation the customer of the web-based system), the web system supplier saw this development of a web-based system as a possibility to create a standard product for further sale to other service providers.

Although the service provider had great trust in the knowledge of the supplier about web systems, the web system supplier was very keen on winning the order from Tetra Pak, since they saw Tetra Pak as a master in business processing and modelling.

4.4 Customer processes

After the introduction of the web system, the processes from the customer into the organisation can take place through three different channels: telephone, direct personal contacts and through the e-business place. Whatever channel the customer chooses, the order has to be put into the web system either by the customer or by the order handler within Tetra Pak Business Support according to Figure 16.

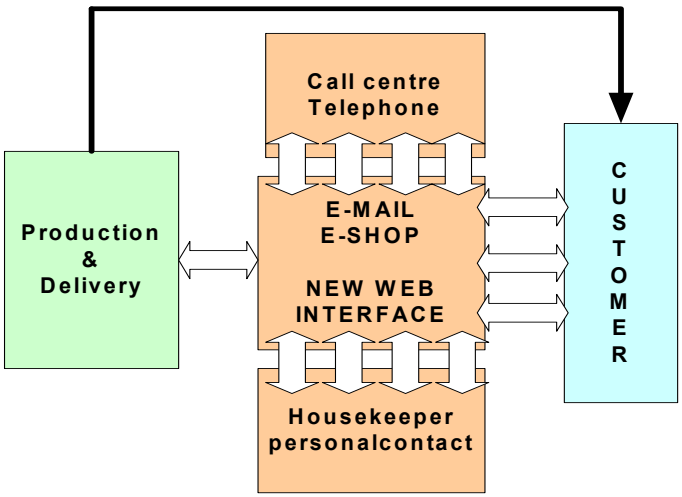

Figure 16: Information flow (white arrows) and flow of goods and services (black arrow) at the service provider

It is vital for the service company to win customer acceptance of the new channel; otherwise the employees will have to take the customer's role in entering all orders into the system after the order has been put through another channel. In the short term it is acceptable if the employees handle the work of entering orders into the system; however, a long-term goal of the company is to decrease administrative work and telephone time internally, through customer channel transfer.

4.4.1 One year after the introduction of the web-based system

One year after the introduction of the first offering ("meeting support") on the web-based system, the transfer of customers over to the new e-channel has occurred according to the graph in Figure 17.

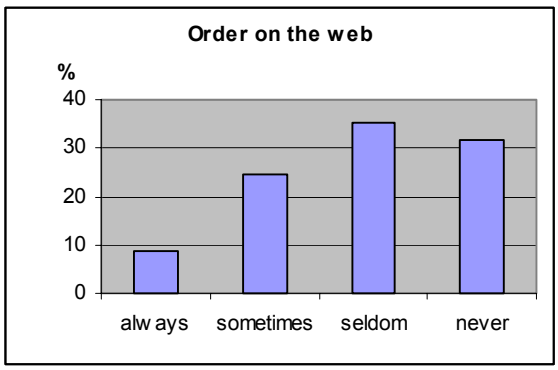

Figure 17: Percentage of customers that order from the "meeting" offering one year after introduction

4.4.2 The link between the company processes and the customer processes

As an example of customer process mapping, a typical computer purchase order sent from a customer company to the supplier is visualised in Figure 18. It is shown that the link between the customer and the supplying company appears late in the customer's process. In order to compare this customer process with the internal business processes, a number of internal business process maps from Tetra Pak Business support have been analysed (Appendix C). In all of them the first step can be translated as " the need of the customer". By taking a critical view of these maps, "the customer need- step" represents what the customer wants to buy rather than a need. By mapping the customer's process prior to the point of order, as done in the example below, one can identify steps in the customer's process that can be considered non-value adding in the customer's core business, while yet a need identified prior to the point of order. In order to achieve a better knowledge of the customers' process when using provided services, it is suggested that Tetra Pak Business Support map their customers' processes. The increased knowledge about the customer can be used to create added value to the customer through involvement earlier in the customer's process, as marked by the green arrows in Figure 18, where identified steps in the customer process can be taken over and conducted by the supplier rather than, as at present, by the customer.

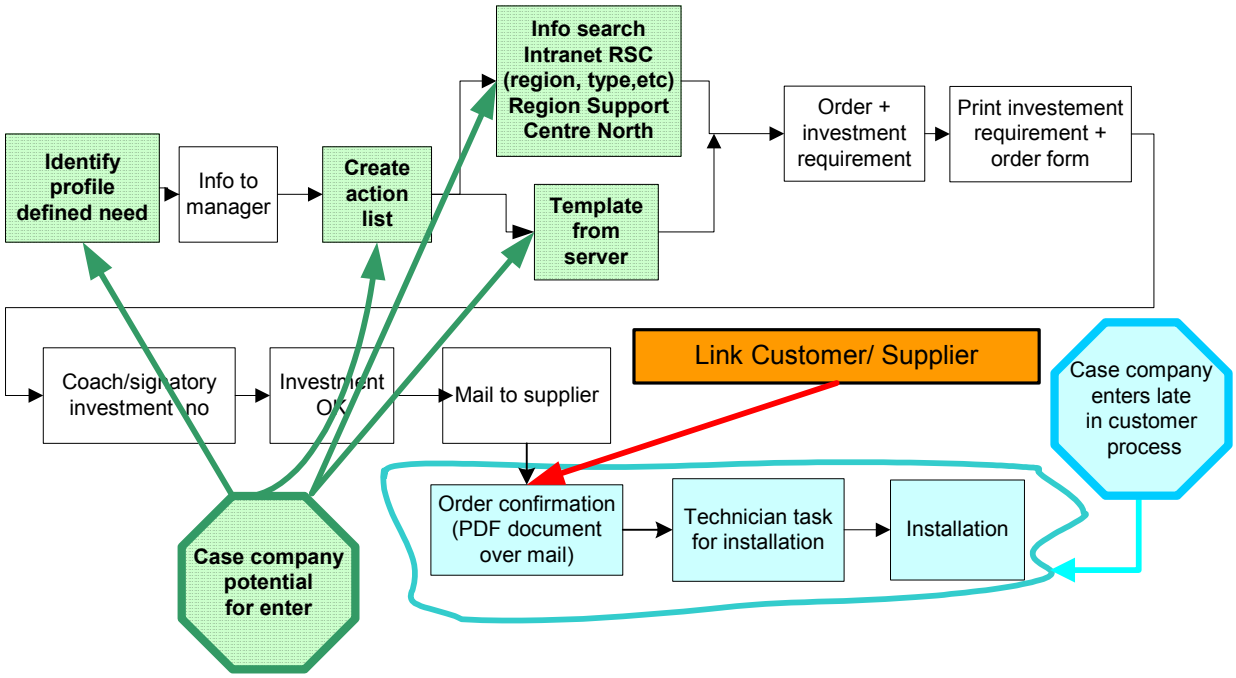

Figure 18: Generic customer process at computer purchase green for customer and blue for supplier

The supplier can use the increased customer knowledge gained from customer process mapping in the value process. As one example of value understanding, the inventory of need made early in the customers' process shows that certain categories of

customers (users) have certain specific needs. Through this knowledge, existing products and services can give more value to customers if the processes around those products or services are developed [133] in order to fulfill the needs of the different users.

If applied to the company in this case, the supplier should be able to add value to its customer through mapping the different user groups in their processes of using a certain product or service from the service provider. From these maps, the supplier is able to extract the need of a specific user group. Based on that specific user need, specific "value packages", i.e. bundlings of products into standard packages, can be developed. Such value packages are customized to fit the specified user, according to the nodes in the model suggested in Figure 19.

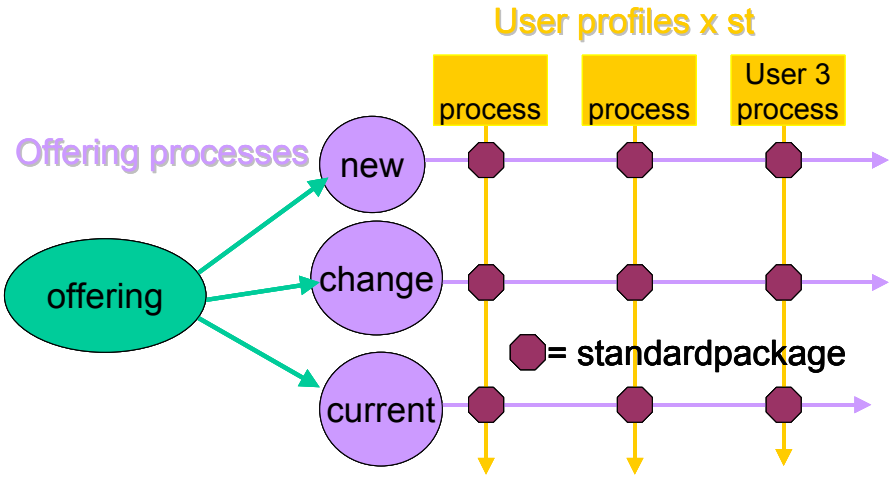

Figure 19: The user specific processes in matrix with offering processes

The model suggests an expansion of the offering thinking into a combination of offering processes with the processes of different pre-identified user groups. The model can be explained by an example of the offering "*Office Support*" referred to on page 41, where the example describes a workplace. The offering process (horizontal purple arrows) to a customer is either a new workplace, a change in the existing place or current continuous service on an existing workplace. User processes explain how different user groups use their workplaces, e.g. users who travel a lot most likely have other needs than users who spend most of their time at their desks. This model allows for customization of bundled products that fit the needs of the different user groups, while at the same time opening an opportunity for standardization of the products included in these specific packages marketed in each node of the matrix.

The web system is the channel and tool for marketing, and for providing information about these user-specified packages that are developed in order to meet the need of a certain user group. The matrix shows how a value process can be created and

[133] Champy, J. (2001) "New products of new processes?", Sales & Marketing Management, May 2001

transformed into the value process model. From the theory, it can be visualized as in Figure 20.

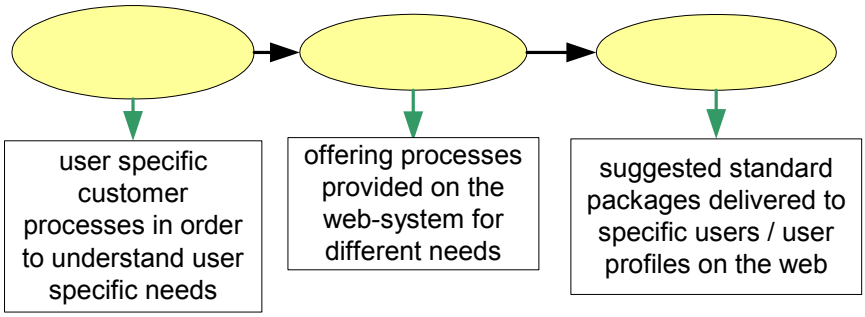

Figure 20: Value model suggested for web system at service provider

Through mapping different user groups when using a certain product or service from Tetra Pak Business Support, as suggested in Figure 19, an increased understanding of the needs of that specific group will be achieved. One way of creating such a map is to follow a user during one day at the workplace in order to identify experienced problems or important issues to the user. Through that increased understanding the supplier, Tetra Pak Business Support, can develop offering processes that apply to different situations in the users process. Within each offering process visualised on the web, user specific packages can be developed in order to meet the need of the user.

The value process in Figure 20 can be considered complete in this case if the different users are mapped in order to understand user specific value, as in the first value process step. At present, however, the value-understanding step is omitted on the internal process maps where the first step named "identify customer need" rather represents what the customer wants to buy than an explicit need. That first step does not represent the entire customer process since it does not include the steps taken prior to the point of order.

5 THE SWEDISH PHARMACY CASE

5.1 The selection of the pharmacy as a comparative case

During the course of our research we realised that the Swedish pharmacy intended to create a business-to-consumer web-based system for the purchase of prescription pharmaceuticals in the first place and secondly for other health care products presently sold in pharmacy outlets.[134] An initial contact with the pharmacy made it clear that this would be an appropriate case for identifying eventual gaps between potential customers and the internal users, as in the previous case. The idea behind adding an additional case to the study was to be able to make comparisons between two e-business system developments and their introductions. As with the first case, the second case also provided an option for studying customer processes, in order to evaluate the introduction of an e-business system to end users, through the value process used in the previous case. The established case selection criteria, used in the previous case, i.e.:

- new development of a web-based e-business solution,
- a web-solution with commercial products to end-users,
- implementation of the web-system as an additional channel to already existing business,
- accessible secondary data from customer surveys and internal investigations and
- permission to make observations at local pharmacies,

were all fulfilled by the virtual pharmacy.

5.2 The Swedish pharmacy

The Swedish pharmacy was established in 1970, with the vision to create the largest possible utilisation of pharmaceuticals at the lowest possible cost[135]. It is a state-owned monopoly with the exclusive right to sell and provide the Swedish community with pharmaceuticals. All pharmacy outlets in the country are owned by the Swedish pharmacy corporation, Apoteket AB. The 900 pharmacy retail outlets have 85 million customer visits per year, with a total turnover of 27 866 million SEK in 2000. [136] The Swedish pharmacy had 11.000 employees in 2000, with a personnel cost of 3474 million SEK.

In March 2001 an internal intranet was established in order to support customer relations and to enhance the participation of the employees. The aim of this intranet was to facilitate the daily work and to establish an internal channel for exchange of experience and knowledge. However, each local pharmacy is organised as a separate unit isolated from the others in terms of information about customers and their purchase of medicine.

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[134] From internal pre-studies
[135] Free from http://www.apoteket.se, 02-05-16
[136] Apoteket AB Årsredovsning 2000

The organisation of the pharmacy can be presented as in Figure 20.

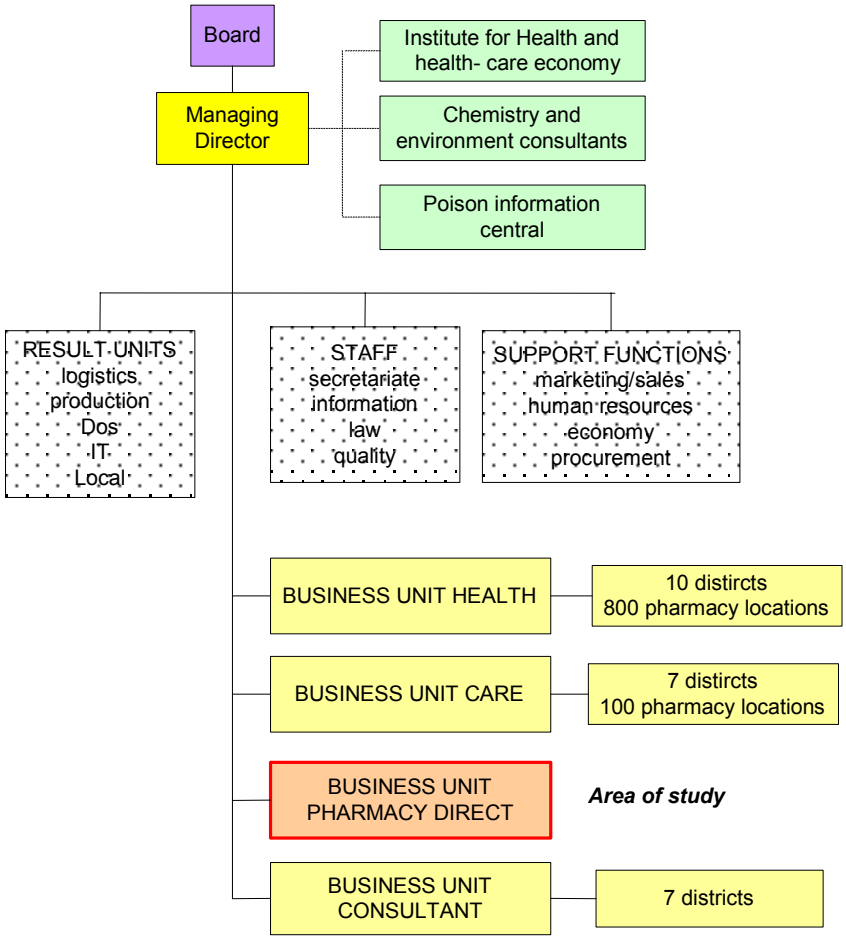

Figure 21: The organisation of the Swedish Pharmacy[137]

Seen from the customer perspective, the pharmacy has three different customer areas: the contractual-hospitals area, the prescription medication area and the self-care area. The contractual-hospital customer area represents the business-to-business relations, with county councils, communities, military services, private care centres and prescribers as the most important customers. The prescription medication area represents the group of customers that uses prescription medication regularly or occasionally. The area for self-care serves customers who use non-prescription medicine and other health care products. The latter area is increasing due to the fact that more and more prescription medications are becoming available without prescription. The major role to the pharmacy in this area is to give guidance to customers about different medications and health concerns.

The pharmacy sees it as their responsibility to give entitled service, medication information and medication availability to their customers.

[137] http://www.apoteket.se , 02-05-16

5.2.1 Pharmacies elsewhere

The Swedish pharmaceutical monopoly is unique. In many other European countries the pharmacy outlets are privately owned; the only restriction to open a pharmacy elsewhere is a mandatory proof of completed pharmaceutical education.

Different markets have different regulations when it comes to the trade of pharmaceuticals. In most European countries there are strict regulations governed by the state on establishment, pricing, assortment and competence requirements. In Sweden, however, the government has commissioned the majority of the regulatory issues to the pharmacy corporation, Apoteket AB. In the USA, with several privately owned pharmacy outlets, the market is open for competition.

Due to the global presence of foreign pharmaceutical retailers on the Internet, fear of foreign competition on the domestic market has arisen, specifically since foreign competitors work under different regulations. The EEA agreement (European Economic Association), for instance, has made it possible to import pharmaceutical products for personal use in Norway, provided that the products are legal and that the amount corresponds to personal use.[138]

In terms of foreign virtual pharmacies, the USA can be seen as the leader where many pharmacies already have the additional channel of e-commerce. The successful online pharmacies in the USA have been those that have integrated e-business with their brick-and-mortar pharmacy or have merged with other existing brick-and-mortar pharmacies. Drugstore.com, for instance, has merged with the brick-and-mortar retail chain Rite Aid. Through this merger, Rite Aid gets access to online services, and Drugstore.com will be promoted in the stores and also gain access to the infrastructure of Rite Aid. The pharmaceutical e-business cannot replace the local pharmacy because of acute situations, which typically account for 20 to 30 percent of the purchases in a drugstore in USA.[139]

5.3 The Pharmacy Direct

In the year 2002 the Swedish pharmacy introduced the concept of a virtual pharmacy within the business area pharmacy direct. The strategy of this introduction can be discerned in the annual report of year 2000, where the business area pharmacy direct can be found and is placed on the organisation chart. The vision of the pharmacy direct is, together with the physical pharmacies, to provide increased availability and freedom of choice to their customers, through the new channels of Internet, telephone call centres and electronic prescriptions. The pharmacy will actively promote the electronic prescriptions in order to increase security, since uncertainty in interpretation of handwritten prescriptions will be eliminated. The pharmacy also expects the new service to add value to customers through time saving and smooth

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[138] Grund, J. and Vartdal, T. (2000) "Distribution of pharmaceuticals – a Norwegian logistic perspective", Pharmacy World & Science, Volume 22 Nr. 3, 2000

[139] Warner, M.(1999), *Drugtest,* Fortune Magazine, July 19

handling. In parallel with the new channels, the virtual pharmacy will include a home delivery project.[140]

Prior to the launch of the entire pharmacy direct concept, information about self-care and non-prescription medication has been available on the pharmacy web site, www.apoteket.se. The web site is considered an important element in the marketing communication strategy.

The vision of the new virtual pharmacy to increase freedom of choice to customers has four prioritised areas:

- Ordering
- Delivery
- Consultancy
- Payment

It is planned that the development should be directed towards identified and verified customer needs. Large consumer groups and chronic customers, as well as communities and service homes should be the prioritised segments according to the strategy and plans. High priority should be given to decreasing waiting times and reducing queues at the physical pharmacy locations. [141]

The marketing of the new channel will take place through advertising and through the physical pharmacy locations, as well as on the already existing web site. It will be clearly stated in the marketing campaign that the virtual pharmacy will be a *complementary* channel to the already existing channel.

As identified by Porter[142], on-line products and services must demonstrate that they provide real benefits, thus fulfilling the need of the customer, in order to achieve a planned channel transfer. This means that the pharmacy needs to provide an added value to the customer in order to achieve their goal of time saving and smooth handling through, among other things, decreasing waiting times and queues at the physical pharmacy locations.

5.4 Data collection

5.4.1 Existing data provided

The results from a couple of pre-studies made internally at the pharmacy as a pre-project were provided at the start of this study. Different methods were used in the different pre-studies in order to ascertain the needs of different customer groups. The studies were made as background information and input to the pharmacy prior to the establishment of the virtual pharmacy. The different parts provided from the pre-studies were:

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[140] Summary of internal pharmacy pre-studies
[141] Summary of internal pharmacy pre-studies
[142] Porter M. E. (2001) "Strategy and the Internet", *Harvard Business Review*, March 2001

a) One section of 18 structured interviews with prescribers and a set of 100 structured interviews with local pharmacy managers with the aim of ascertaining the needs of these user groups.

b) A web survey, where 1,487 visitors to the pharmacy web site responded to the survey regarding their impressions of the present pharmacy web site.

c) A telephone survey with 1,005 respondents in the capital region of Sweden made by an independent market research company. The purpose of the study was to explore the attitudes to communicating with the pharmacies over the telephone or via the Internet among private customers. This study also included two focus groups with customers who purchase non-prescription pharmaceutical or health care products at least once per half year and prescription pharmaceuticals at least once per year.

d) A focus group study based on six focus group discussions with representatives from six patient organisations and 2 organisations for retired people.

e) 16 in-depth interviews with chronic customers in constant need of medication at four different locations in Sweden. This group of chronic customers, according to the pharmacy, is of specific interest since these customers account for a large portion of the pharmacy's turnover.

f) A mapping of the present telephone traffic through a statistical survey of all incoming phone calls to 100 pharmacies. The purpose of this mapping was to obtain a foundation for the telephone channel.

g) One interview study with the aim of investigating the willingness to pay for home delivery services, based on 311 interviews.

h) One internal investigation about distance pharmacy.

The above-mentioned studies were provided as input to this research. It is a comprehensive set of input to a study like this. However, all input except for the survey (c) made by the independent marketing institute has been analysed by the members of the pre-study project, all of them employees of the pharmacy. Thus conclusions are made solely by pharmaceutical employees and can be viewed as internal. In order to add an objective outside view, additional studies were carried out to complement the existing data at hand. These studies focused on adding questions that were not brought up in the pre-project studies (Appendix D).

5.4.2 Complementary data added in this research

The first complementary study in this study was carried out as observations at local pharmacies in order to study customers in the pharmaceutical environment. Specific attention was paid to issues that were omitted or had limited focus in the pre-studies, such as: waiting times, non-purchase occasions, need for help and advice, impulse purchases or brand selection. The observations took place on three occasions, two in an urban pharmacy outlet and one in a suburban pharmacy outlet. Each observation was carried out in a 2-hour session, with two observers – one observing the non-

prescription section and the other observing the prescription section of the pharmacy. Records from the observations are found in Appendix E.

During the course of the observations, 26 short interviews of about 5 minutes were carried out at the pharmacy locations. The purpose of these short interviews was to randomly select customers in the traditional channel and ask them about their attitudes to purchasing medicine over the Internet, and also to ask them about the specific visit they were making at the pharmacy at the time of the interview. A total of 34 persons were asked to answer the questions, which resulted in 26 interviews and in 8 rejections by people who did not want to participate. To gain deeper knowledge about home shopping and home delivery, another set of 9 interviews were held with consumers in their home environment. Each interview took approximately 45 minutes. The respondents in both sets of interviews were selected in order to get a mix of female and male respondents in different age groups.

A workshop was organised to explore the internal opinions among the employees of the pharmacy direct organisation. 14 employees from the pharmacy, together with three guests with former experience in e-commerce and call centre establishments, and four university representatives participated. Input was given from the guests about their positive and negative experiences from e-business to end customers. Based on the input from these speakers, an idea generation took place, which resulted in four working groups on the following subjects: customers, organisation, logistics and web site development.

5.5 Results from the studies

The results presented are condensed from all sources of input to the study, i.e. the pre-studies, the observations, the interviews and the workshop.

5.5.1 Pharmacy direct organization's perspective

The internal organization of the pharmacy has identified some impediments to the virtual pharmacy. Firstly, there seems to be extreme sluggishness and unwillingness to change, partly because the change can be seen as a threat of rationalization from an organizational point of view. Furthermore the new pharmacy direct organization was considered competitive and perceived as having higher status internally. From a governmental and legal point of view, some problems in terms of handling and approval of electronic prescriptions have been identified. Furthermore, the concept of the virtual pharmacy must be accepted among doctors and other external parties. From a logistics perspective, problems like deliveries, delivery times, costs, and security were mentioned among others as unsolved issues.

All of the above-mentioned issues could be considered as involving internal relations, while the most interesting feature for this study has been how they consider their customers and the customer relations from the internal perspective. The major concern in terms of their customers revealed in the workshop was that the introduction of a virtual pharmacy would require a change in behaviour and attitudes

among their customers; furthermore they claim that their customers do have limited knowledge about the pharmacy offerings. They see it as a major obstacle to change their customers into adapting to the new channel. This implies that the step of understanding value in the value process has basically been omitted (Figure 22).

Furthermore it was concluded by the workshop participants that the virtual pharmacy would probably have a higher value for internal users than for customers. This indicates that the value creation has been developed from an internal perspective and not from the perspective of the customers.

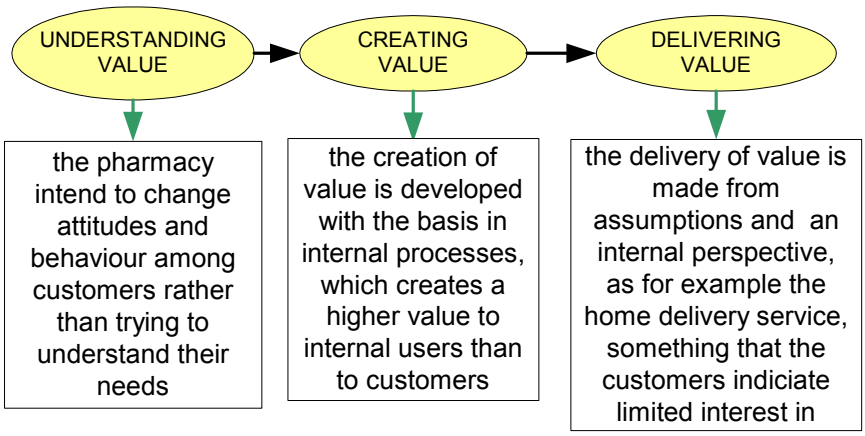

Figure 22: The value process from the internal pharmacy perspective

With relation to the value process model (Figure 22) it can be argued that the phase of understanding the customers' needs has been transferred into a view of changing customer behaviour and attitudes, rather than understanding the needs. In the value creation phase, the pharmacy takes the suppliers' perspective and creates value from inside the company rather than in relation to their customers, through assumptions about customer needs. It is for example assumed that the customers are interested in home delivery, even though both the pre-studies and this research indicate the opposite. Finally the pharmacy considers delivering value to be based on the assumptions in the form of (for example) a home delivery service with a separate distribution centre, which seems to have little relevancy to the customers.

In a discussion about how to tackle these obstacles, they see possibilities in that they do have the customers as customers already, although in the traditional channel, secondly that the virtual pharmacy will relieve the pressure on the health care sector, and finally that they will add value through home delivery services. However, if the value process is not reconsidered the customer will most likely stay in the traditional channel since the new channel rather creates value internally to the pharmacy than to the customers. The process of changing customer attitudes and behaviour will probably be more demanding than trying to revise the understanding phase in the value process in order to create and deliver an added value to the customer.

5.5.2 The perspective of the pharmacy customers

Presently customers in the traditional channel perceive the personnel at the pharmacies as[143]:

- Professional
- Correct and factual
- Nice and helpful
- Rebuking and admonishing

The personal contact at pharmacies is considered important and provides a perception of seriousness and quality[144], which indicates that a shift to the Internet channel might be rejected unless this channel gives added value compared to the traditional channel. The customer perceives the Internet channel to be impersonal. It is shown in the summary of the different pre-studies that 50% of the customers could consider transferring half of their pharmaceutical contacts to the Internet channel, while 11 % could consider transferring all of their pharmaceutical contacts to the Internet channel. However, the study does not indicate in what age groups or genders this is valid. Other studies[145], however, show that approximately 50 percent of the Swedish population uses the Internet regularly. In the age group 50-79, however, only 39% use the Internet at least once a month. Differences in attitudes show that men are more positive to the Internet than women and that young people are more positive than the elderly. In contrast to Internet *usage*, Internet *shopping* has not yet reached any considerable volume in Sweden. From an age perspective, people in the age group 31-50 are most positive to buying things online. There is, however, no significant difference between men and women. Our observations at pharmacies show that a majority of the customers are elderly people, predominantly women, and consequently do not match with the typical Internet user (Table 5 and Figure 23).

Table 5: Visitors at the pharmacies

Observation	Total visitors	Total female	Female 50 and above
1	35	19	11
2	48	28	21
3	39	25	16
Total	***122***	***72***	***48***

[143] Pre-studies c and d
[144] Pre studies c and d
[145] Maddox, L.M. (1999),

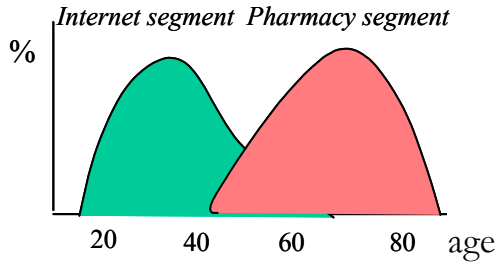

Figure 23: Segmentation by age of Internet and pharmacy customers

In order to get an idea of how a virtual pharmacy would be perceived among the customers in the physical pharmacy, short interviews with customers on location gave the following indications:

- 9.6 % had visited the pharmacy homepage on the Internet
- 61.5 % would consider searching for information on a pharmacy web site
- 27.0 % would consider purchasing from a pharmacy website
- 85.0 % had combined other errands with their visit to the pharmacy.

The corresponding numbers in pre-study b[146] provide the same indications, where:

- 23,3 % know that the pharmacy has a web site
- 13,7 % have visited the pharmacy web site
- 68,9 % assume that the pharmacy has a web site

Somewhat higher percentages in the internal pre-study have visited the site, but this might be because the results are based on a web survey, which excludes non-Internet users. It is worth noticing that only 27% of the respondents in the short interviews could consider purchasing pharmaceutical items over the Internet, while the willingness to search for information is much higher.

In a telephone survey (pre-study c) the respondents were asked to indicate reasons for not purchasing products on the Internet. The most highly rated reasons were:

- safer to shop myself, risk of mistakes
- the pharmacy is nearby, it is easier to shop in the local pharmacy
- lack of personal contact on the Internet
- desire to see and inspect the products before purchase
- reluctance to make payments in this channel.

5.5.2.1 Health care information

As seen from the results both in the short interviews and in pre-study c, customers are more adaptable to searching for information over the Internet than to purchasing pharmaceuticals from the channel. The major advantage to people is the possibility of being anonymous in that channel. In pre-study survey b, 83% of the respondents had

[146] Pharmacy pre-study b

obtained information from the pharmacy web site and 78% see obtaining information as their main incentive for using the pharmacy web site. The customers show confidence in the information given by the pharmacy both over the Internet and from the personnel at the local pharmacies.

It is shown that the major interest in the Internet among health care consumers is that of obtaining information. This corresponds to t Porter's view that businesses have the opportunity to create a competitive advantage through providing extensive information about their products and services[147].

5.5.2.2 Home delivery

From the in-depth interviews in this study it can be concluded that the interest in home delivery of pharmaceuticals is modest. Most customers live geographically near a pharmacy or a pharmacy representative; furthermore, they do not visit the pharmacy so often (compared to for example visits to grocery stores). The weight and volume of pharmaceuticals usually does not incur any problems either. Two interviewees mention that they would be interested in having pharmaceuticals delivered to their homes the day they become disabled and cannot get to the pharmacy on their own. Furthermore they would be willing to pay extra for that service if they were disabled. The results about home delivery from the personal interviews can be confirmed by the interviews in pre-study g that produced the following results:

- 62 % of immediate[148] customers are not interested in home delivery of pharmaceuticals
- 67 % of the normal customers are not interested in home delivery of pharmaceuticals

By way of comparison, a study in the USA finds that 90% of the customers who place orders for pharmaceuticals over the Internet prefer to pick them up at the local pharmacy rather than having them delivered to their home.[149] This implies that the idea of a home delivery service will not add value to consumers.

[147] Porter M. E. (2001) "Strategy and the Internet", *Harvard Business Review*, March 2001
[148] Immediate customer is a customer who is in need of medicine within 24 hours after prescription.
[149] Porter M. E. (2001) "Strategy and the Internet", *Harvard Business Review*, March 2001

5.6 Customer processes

From the observations made at the local pharmacy it was found that:

- 30% of the customers bought both non-prescription and prescription pharmaceuticals during their visit
- 24% of the customers made choices between different brands of non-prescription items
- 11% left the pharmacy without any purchase
- 28% of the purchasers of prescription pharmaceuticals were men
- 41% of the purchasers of non-prescription pharmaceuticals were men
- 34% asked for help or advice in the non-prescription section

As revealed in these observations, 34% of the customers in the non-prescription section want personal consultancy in their purchase process, which will be hard to satisfy in the Internet channel.

It is clear that when visiting the physical pharmacy for a prescription medication, the customers stroll around in the section for non-prescription medicine and health care products during the waiting time. 30 % of these customers make a purchase in this section.

The major disadvantages mentioned by customers both in the interviews and in the pre-studies summary are that there are too long waiting times at the pharmacy and also frequent out of stock occasions. The observations also show that 11% of the visitors leave the pharmacy without any purchase.

Another frustration to customers of prescription pharmaceuticals is that they have to pay two visits to the pharmacy when acquiring a prescribed medicine. The traditional customer process when acquiring a prescribed pharmaceutical can be visualised as in Figure 24.

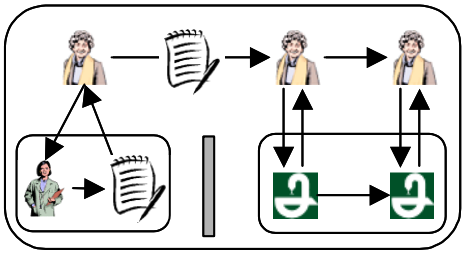

Figure 24: Traditional customer process at purchase and pick-up of pharmaceuticals

The dual visits consist of an initial call to hand in the prescription and a second for pickup after the medicine has been prepared, since the processing time to prepare a prescription order is long enough to necessitate a second visit to pick it up. This is one of the most frequently mentioned obstacles found in the interviews with customers regarding the process of obtaining medicine. The customer in this traditional process can be seen as the link between the doctor and the pharmacy, and in the present set-up there is no direct contact between the doctors and the pharmacies.

Two interviewees in the in-depth interviews use rare medicine regularly, and have to call the pharmacy in advance to make sure that their medicine is in stock prior to pickup. One of them specifically states:

"*If my doctor sent the prescription directly to the pharmacy, for example by e-mail, the medicine could be prepared and ready when I arrive at the pharmacy"*

5.7 Customer value

In order to achieve a value process that provides a relevant value to the pharmacy customers as proposed in the theory[150], it is suggested that the pharmacy introduce a B2B e-business rather than a B2C e-business in order to meet the need from the largest group of consumers, i.e. the elderly.

As revealed in the graph (Figure 23), and verified in the studies, the typical Internet user does not at present correspond to the typical pharmacy customer in gender and age. In a few years, however, the Internet segment will better correspond to the pharmacy customer segment, since the Internet generation will grow older. Thus the Internet pharmacy will better provide a relevant value to their customers in the near future.

One example of satisfying a customer need and creating added value in the customer's process of obtaining medicine is to eliminate the dual visit and replace it with a single visit — if the doctor utilises a web-based system to transfer the prescription to the pharmacy (a B2B solution). In that way the customer will be able to pick up a prepared medicine without waiting times and out-of stock occasions. This option is possible at some pharmacies today, and with certain doctors. The present procedure, however, is that the doctor has to e-mail the prescription to a predetermined pharmacy as in Figure 25, rather than entering an order into an integrated web system.

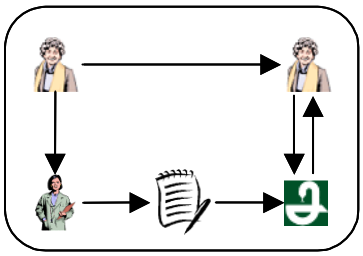

Figure 25: Future customer process with one visit only

If the pharmacy arranged their web-based system as a central system as suggested in Figure 26, a doctor's prescription could be transferred into the central web system, and then prepared by any local pharmacy that has access to the system. Furthermore, the customer could benefit from searching for information about his or her own medication, if customer profiles were created in a central web system.

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[150] Bowersox, D.J., Closs, D.J & Stank, T. *Ten Mega Trends that will revolutionize supply chain logistics,* Supply Chain Management

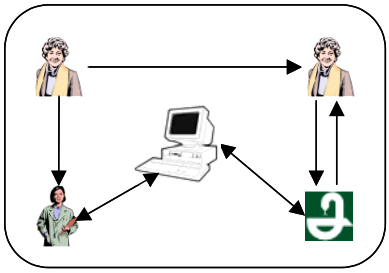

Figure 26: Centralised system for increased customer value

In line with the above reasoning, a more pro-active view of the pharmacy value process is suggested in Figure 27.

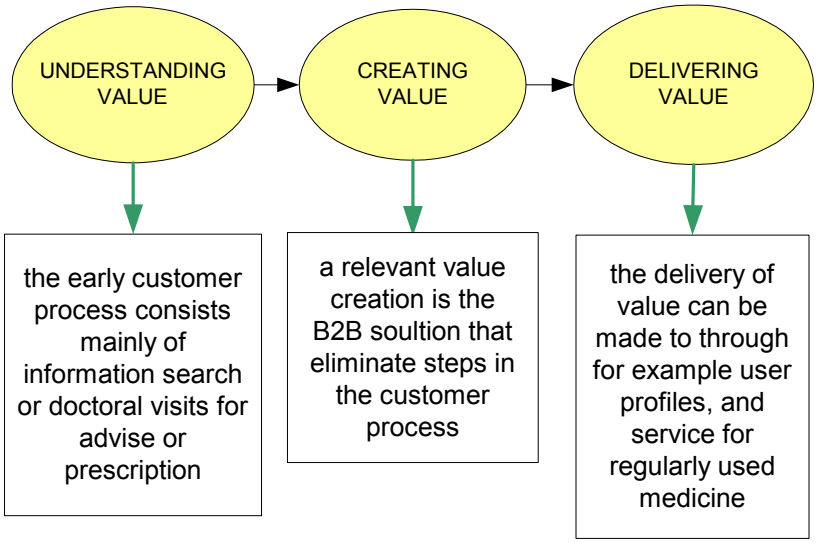

Figure 27: Suggested pharmacy value process

The suggested value process in Figure 27 shows that the most immediate customer need is to obtain information from a virtual pharmacy, or to experience a reduction of dual visits in the process of obtaining prescribed medicines. In order to fulfil these needs, the suggestion is that the pharmacies introduce a B2B solution for commerce in pharmaceuticals, and a B2C solution for information handling in order to create such value. In order to deliver an added value to end users the information can be customized, so that user-specific information is given depending on the customer profile a user has in the web system.

It can be concluded in this study that the understanding value phase has been insufficient in the development of the pharmacy e-business solution. Through considering the customers processes, for different user groups as in previous case, a better understanding of the customers' need or experienced problems could be achieved. Through a better understanding, it would be possible to carry out the value creation phase and the value delivery phase from a customer perspective rather than from an internal perspective.

6 ANALYSIS

In this research, two case studies have been made in order to identify gaps in the supplier/customer relationship involved in newly developed web-based systems for trade of products and services. The focus has been placed on the end users and their attitudes towards this development.

6.1 Gap analysis from the case studies

The major and most significant gaps in expectations on the web-based business systems between end users/customers and the supplier in the case studies can be summarised as follows.

- Customers see more value to the supplier than to themselves in the new web-based systems, in both studies.
- The customers in the Tetra Pak case are willing to purchase small item orders on the web; however, they still require personal contacts with the supplier for larger projects or errands.
- The major driving force to use the Internet channel in both cases is finding information and the amount of information provided.
- Pharmacy customers see no need for home delivery unless they are unable to get to the pharmacy themselves.
- The largest opportunity for a virtual pharmacy is providing customers with information about health and medication.
- It is found in both cases that complexity of web interfaces drives the customer to stay in the traditional channels.

Even though the numbers of customers differ between the two cases, there are similarities in some of the gaps identified. The first similarity is that the end users or customers see more value to the supplier than to themselves in a web system. This might be due to the fact that the customers have a high level of trust in the suppliers (Tetra Pak and the pharmacy) in the traditional channel. This stresses the importance of on-line products and services to demonstrate that they provide real benefits, in order to make the customers transfer to the new channel.
Another similarity found in the two cases is that the major driving force for using the web is the search for information. The process of obtaining information over the web is considered as value adding and as a simplified process compared to the traditional way of accessing information. In the Tetra Pak case it is also accepted among the customers to purchase small item orders over the web, while the majority of pharmacy customers reject that possibility. One explanation for this difference is that all Tetra Pak customers have access to computers and use them on a daily basis, while some groups of pharmacy customers do not have Internet access. It is also found in both cases that the customer interface in the web systems is considered too complicated, which drives customers to stay in the traditional channel.

6.2 Customer needs and demands on web-based systems

Based on the input from the gap analysis in the two cases, one can conclude that the integration of customer needs in the development of the web-based systems in this study has been insufficient. One example from the cases is the customer feedback on proactivity found in the Tetra Pak case. The core competence in the company, according to the employees of the service provider, is the extensive knowledge of their customers and their customers' business. Despite this only 1,9% of the customers agree in full that the service provider is proactive in meeting the needs of the customer.

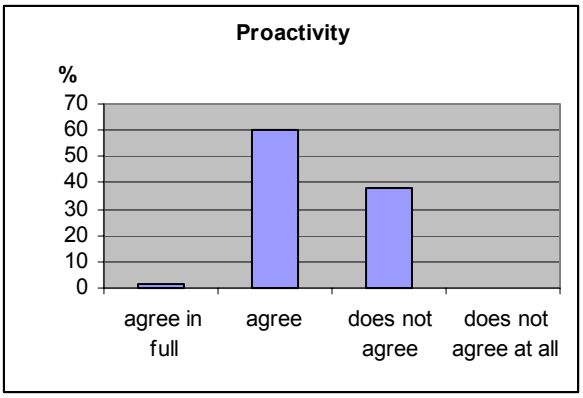

Figure 28: The customers' opinion on proactivity from the provider in fulfilling customer needs

Another example from the pharmacy case is the intention to develop a home delivery system, although the customers see no need for one.

From the gap analysis in the two cases, one can conclude that the main requirements on the web-based systems identified by customers in these cases are:

- The customer interface must be easy to explore, use and access.
- A web-based system should provide sufficient and reliable information with good search functions.
- The web system should be a complementary channel because personal contacts are still required for complex products, larger projects or sensitive information.

A better understanding of customer needs can be achieved partly through a gap analysis based on inputs from interviews with customers and observation of the customer process.

6.3 Internet users

Many people in Sweden have access to the Internet and use it regularly. It has, however, been ascertained that Swedish Internet access is unevenly spread among different user groups, which confirms that users must be viewed in segments rather than as one group.[151] Basic sociodemographic factors, such as age, employment status,

[151] Bergström, A (2000), *Internet – från revolution till vardagsanvändning,* Land du välsignade, Grafikerna Livréna, Kungälv

family role and household structure, are the most appropriate variables in segmenting B2C customers.[152] Another way suggested for distinguishing Internet users is the stage of life in which they begin their Internet usage.[153] Furthermore it has been identified as important to make customer segmentation prior to the establishment of new businesses based on customer relations.[154]

The differences in access between young and old and between different social groups are still valid in Sweden. It is for example known that the group still left outside the majority in terms of regular Internet use is the older, retired people.[155]

Table 6: Regular Internet use by different user groups

	1999	**2000**
All	42%	49%
White-collar (higher level)	71%	74%
Blue–Collar	32%	41%
15-29 years	74%	82%
60-75 years	11%	16%

This is also confirmed from both case studies, where the internal users (older average age) at Tetra Pak Business Support have less computer experience in intranet and Internet usage than do the younger end users or customers of Tetra Pak. Similarly it is perceived from the observations and studies of the pharmacy case that the typical Internet user does not correspond to the major segment of pharmacy customers, i.e. the older as shown in Figure 29.

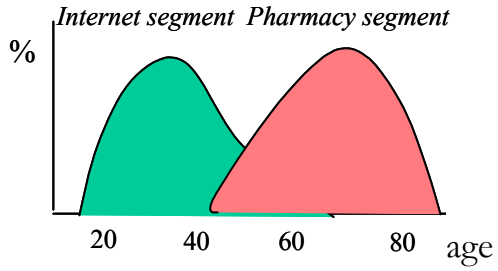

Figure 29: Segmentation by age of Internet and pharmacy customers

6.4 Products and services

An increase of Internet commerce in different industries over the years from 1999 to year 2004 is expected. Table 7 shows the expected increase in the different industries where commerce in the service industry is expected to be 17% in year 2004.[156]

[152] Hutt, E., Le Brun, R. and Mannhardt, T., (2001), *Simplifying Web segmentation*, Mc Kinsey Quarterly 3.
[153] Miller, T.E. (1996) *Segmenting the Internet*, American Demographics, July 1996
[154] Rigby, D.K., Reichheld, F.F. and Schefer, P. (2000), *Avoid the four perils of CRM*, Harvard Business Review, February
[155] Bergström, A (2000), *Internet – från revolution till vardagsanvändning,* Land du välsignade, Grafikerna Livréna, Kungälv
[156] Bauer, M.J., Poirier, C.C., CSC, Lawrence, L., Bermudez, J. AMR Research, (2001), *e-businesses: The Strategic Impact on Supply Chain and Logistics,* CLM, USA

Table 7: Internet commerce penetration estimates[157]

Industry	1999	2004
Service industry	0%	17%
Transportation, trade, finance	1%	34%
Manufacturing	2%	36%
Minerals and construction	1%	15%
Total	**1%**	**29%**

Since it is identified that products provided in e-business can be characterised as services through supplementary services like product information, order confirmations etcetera, even the manufacturing industry has to develop services along with their products in web-based commerce. It is, however,[158] important to consider the difference between purchased products and services and consumed products and services. Most often the purchased products and services are the same as the consumed ones, but in some cases, as for example in the acquisition of information, the customer consumes the service rather than purchasing it. Since obtaining information is one key driving force for customers in using a web-based system, the supplier must deliver added value even for non-purchased services in order to transfer customers into the new channel.

6.5 The value process

The gap analysis based on input from the case studies confirms the importance of going through all the steps in the value process model developed from Andersson et al.[159]

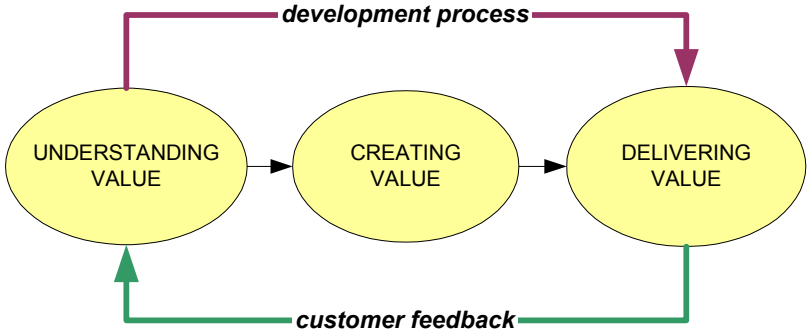

Figure 30: Part of value process modified from Andersson & Naurus

The value model, however, has a business perspective, with a focus on business market processes. The business process focus should benefit by being transformed to also include the customers' processes, so that business is conducted across borders all

[157] Bauer, M.J., Poirier, C.C., CSC, Lawrence, L., Bermudez, J. AMR Research, (2001), *e-businesses: The Strategic Impact on Supply Chain and Logistics,* CLM, USA

[158] Grönroos, Heinonen, Isoneimi, K., & Lindholm, M, (2000) *The NetOffer model: a case example from the virtual marketplace,* Management Decision, 38/4 243-252

[159] Andersson, J. & Naurus, J, (1998), *Business Market Management,* Prentice Hall, N.J

the way to the end user. These customer processes ought to be integrated in the development process and translated into technical specifications in order to involve developers as early as possible in the value process, and thereby eliminate misinterpretations and bridge the market information gap, i.e. the seller's incomplete or inaccurate knowledge of customers' expectations, as mentioned by Parasusraman.[160] The value generating process must be designed to serve customers and to develop, produce and deliver complete offerings that fulfil the needs of customers.

Considering the feedback methods, customer satisfaction (with the drawback of neglecting non-users and the return on quality measure, which is only based on monetary quantitative input), a customer value analysis is recommended.[161,162] In the customer value analysis both customer and non-customer data are merged and integrated into the business environment with competitors. A value analysis can be used to remove unnecessary costs while still fulfilling the needs and wants of the customer/user.[163] The suppliers of the future need to better understand their customers' perceptions of value, and new methods for customer value analysis will become crucial because they will be a strategic marketing tool for auditing customer needs.[164]

6.6 Understanding value

As observed in theory, existing value assessment methods are based on developed products and services and respond reactively to how customers judge the new concepts or products. In order to become proactive, other methods for defining customer needs and values must be developed and used. Ulwick[165] suggests focusing on product or service outcomes, i.e. how the product or service is experienced when used, rather than on finding solutions, since the experts on finding solutions are usually the developers rather than the customers. The customers, on the other hand, are the experts in outcomes from products or services, i.e. they can explain what new products and services are expected to do for them[166]. One way of identifying customer needs would be to follow customers when they identify their need, plan, evaluate, acquire and use offerings from a supplier or its competitor, in order to understand what causes problems and what is appreciated by customers in the outcome from a product or a service.

Through mapping the customers' processes, based on input from interviews and observations, and focusing the mapping throughout the entire process of how the

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[160] Parasuraman, A. (1998), *Customer service in business-to-business markets: an agenda for research,* Journal of Business and Industrial Marketing, vol 13, no. 4/5

[161] Gale, B. T. (1994), *Managing Customer Value* The Free Press N.Y.

[162] Andersson, J. & Naurus, J, (1998), *Business Market Management,* Prentice Hall, N.J

[163] Ulaga, W. & Chacour, S. (2001), *Measuring customer perceived value in business markets*, Industrial Marketing Management, 30, 525-540

[164] Ulaga, W. & Chacour, S. (2001), *Measuring customer perceived value in business markets*, Industrial Marketing Management, 30, 525-540

[165] Ulwick, A. (2002), *Turn customer input into innovation,* Harvard Business Review January 2002

[166] Ulwick, A. (2002), *Turn customer input into innovation,* Harvard Business Review January 2002.

customer proceeds through problem identification, planning, evaluating, acquiring, using and disposing of the existing offerings, problems and concerns in each step of that process can be identified. Through the knowledge of customer problems and concerns in the outcome of a product or service, solutions that solve these problems can be developed, and hence create value to the customer.

It is established in the case studies that the integration of customer needs in the development of the web-based systems in this study have been insufficient. The late entrance of the supplier into the customer process can explain this since the experienced customer knowledge is mainly based on historical data acquired in the traditional channel.

By looking at the different process maps provided by Tetra Pak as an example, it can be concluded that the process maps are made from an internal point of view with one link to the customers. A simplified sketch of the internal Tetra Pak process maps (detailed process maps in Appendix C) is visualised in Figure 31.

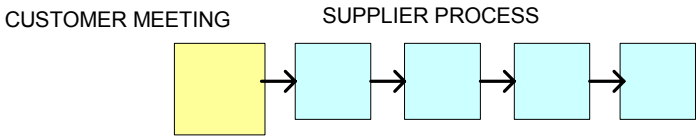

Figure 31: Sample process map from Tetra Pak

The only link to the customer on the process maps provided is the step that includes customer need identification through a customer visit. That lone step named "identify customer need" rather represents what the customer wants to buy than an explicit need. By this internal bias of the process mapping, several steps in the customer process are excluded and are not a source of knowledge to the supplier.

In order to integrate the customer needs in the development of web-based systems, this research suggests that the entire customer processes be mapped in order to understand the needs of customers. It is important to understand how customers acquire, use and plan for the products and services provided from a supplier. By following these customer processes, the problems experienced by the customers with products and services will be visible and acknowledged

6.7 The method of end customer process mapping

Champy[167] argues that customer or end user processes can be dramatically more efficient and effective if properly redesigned for e-business. This view of process mapping recognizes the customer as the starting point, and also the importance of considering customers in the analysis. However, it fails to stress that *all* steps, including the ones that the customer carry out prior to linking into the supplier's process, have to be taken into account. With better knowledge of the customer's process prior to the joining phase, a supplier might be able to add value through steps

[167] Champy, J., (2001), *New products of new processes?*, Sales & Marketing Management, May 2001

identified in that process that can be taken by the supplier. Furthermore, it is likely that new business opportunities for the supplier can be created with increased knowledge of entire customer processes, including the process of consumption, which might bring to light problems experienced by the customer when using a product or a service.

This research concludes that by starting with the customer, and even by starting in the steps that the customer carries out prior to linking into the supplier's process, a better customer need analysis will be created, as suggested in Figure 32.

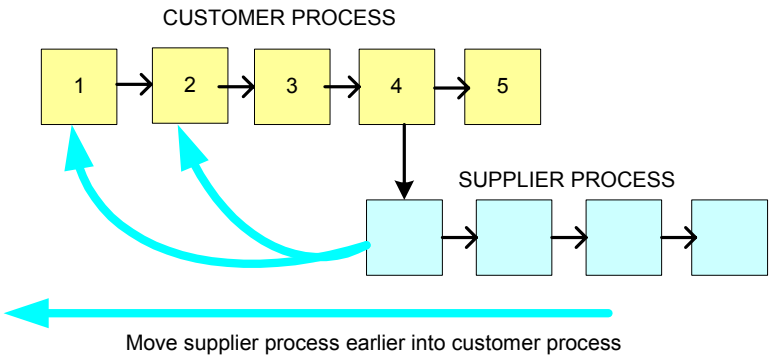

Figure 32: Move supplier process to link earlier into customer processes

The figures in the customer process represent the steps in the purchasing process referred to in the theory where the different steps are:

1. Problem recognition, or need identification
2. Information search
3. Evaluation of alternatives
4. Purchase
5. Post-purchase evaluation

At present the link to the supplier is at the point of order or at the point of purchase, as marked in step 4 in the customers process. However, increased knowledge about the customers' process prior to the point of order enables the suppliers to move their internal process in the direction of meeting the customers' process in earlier steps, as suggested in Figure 32.

6.8 Value creation

Integrating into the customer process can achieve the suggested value creation model. This model is based on the transfer of the identified customer need into a specification for development of an offering process. An example is taken from the Tetra Pak Business Support service setting, when the need from the customer is either for a new kind of service, a change of an existing service or just a regular subscription or agreement to an existing service as presented in Figure 33. This can also be applied in the pharmaceutical setting, where for example a chronic customer needs a new kind of medication, or a change in dosage of an existing medication, or will continue on the

regularly used medication. Depending on whether the customer need is for something new, a modification or a continuation, different offering processes have to be developed and gone through from an internal supplier perspective.

Value will be created through customisation of the products, in the different nodes in the matrix that are developed based on the identified needs for the different user profiles. Through knowledge about customers, standard products can be made and suggested as packages suited for the different user profiles. This allows for standardization by the supplier while the customer recognise a customisation made for the specific user profile.

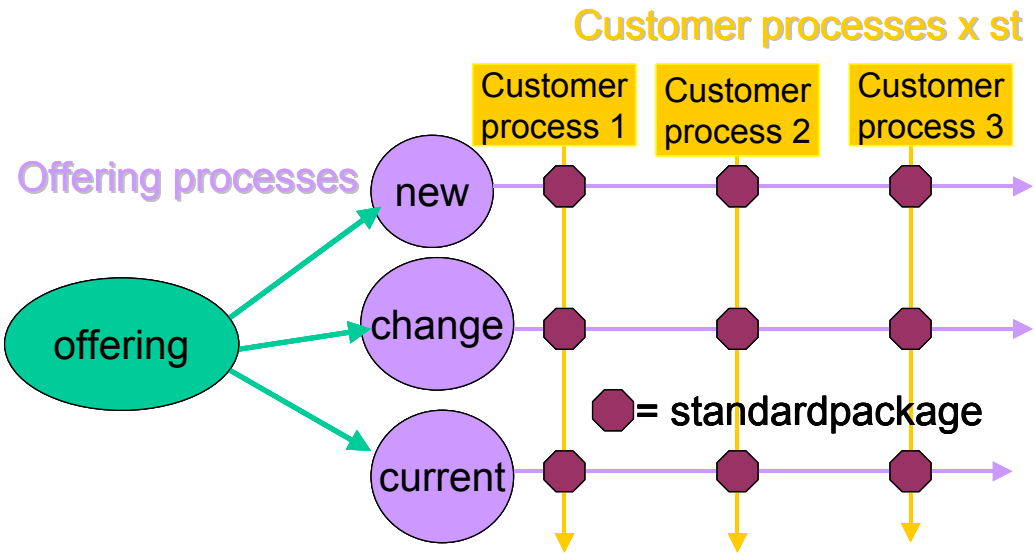

Figure 33: Customer-specific value creation

6.9 Value delivery

In order to deliver relevant value to end users, integration of business processes in the configuration of the offerings is recommended and required.[168] There is agreement about this. However, the process integration should be extended to integrate not only business processes but also customer processes in order to better understand how well the delivered offerings fulfil the value desired by customers throughout their entire value process.

Through the alignment of products and services into user specific offerings, value will be delivered based on user specific needs. The bundling of products and services into an offering will make it easier to present on the web which leads to a simpler interface on the web-system. Another bundling can be created as specific "value packages" such as a package of computer, cellular phone and calendar. The advantage with such packages to the user is that it is tested, guaranteed for and serviced by the supplier. The advantage to the supplier is the possibility of standardising their product portfolio and procurement.

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[168] Kent, J. L. Jr., and Flint D.J., (1997), *Perspectives on the evolution of logistics thought*. Journal of Business Logistics vol.18

6.10 Integrating the value process with customer process mapping

The most important conclusion from the empirical studies is that the phase of understanding value in the value process presented by Andersson et al.[169] and visualised in Figure 28 is not included in the development of the web-based systems examined in this research.

The entire value process consists of three steps: understanding value, creating value and delivering value. When the latter two only are involved in the value process, the products and services developed are likely to fail since they are developed from an internally based perspective.

By taking the value process that was used as a basis for the theoretical understanding of value, and combining it with the idea of customer process mapping, the importance of moving the supplier process towards the beginning of customer processes is shown as in Figure 34.

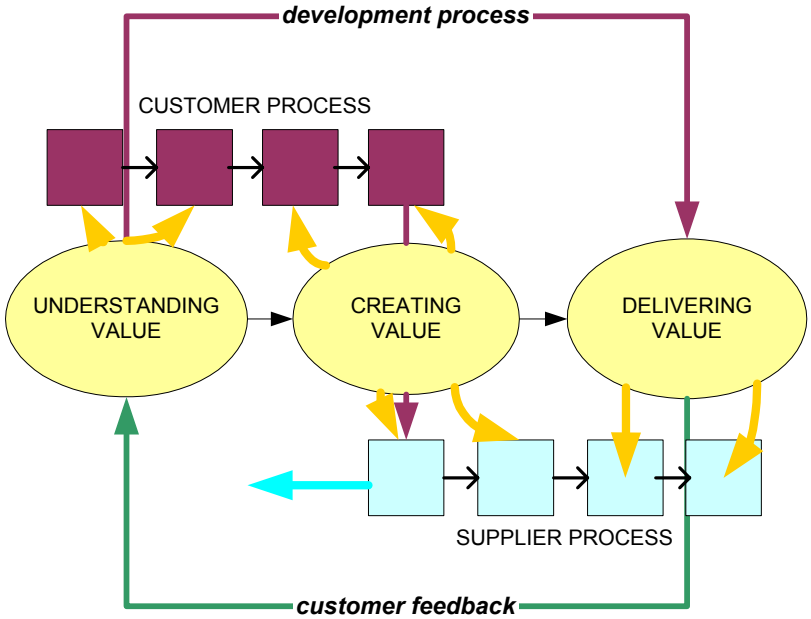

Figure 34: Combination of value process and customer/ supplier processes

The model shows that unless the supplier is able to involve him or herself in the customer process, or is at least able to map and understand the entire customer process, there will be a lack of customer understanding. If the supplier connects too late in the customer process, the phase of understanding in the value process will be excluded, and the supplier will start out in the phase of creating value. The problem with such late involvement is that the value is created from the inside of the company rather than from the customer perspective. One example of such value creation from the case studies is the home delivery service suggested by the pharmacy, where the

[169] Andersson, J. & Naurus, J, (1998), *Business Market Management,* Prentice Hall, N.J

step of understanding customer value is omitted. Not until the entire customer process is understood is the phase of creating value appropriate.

7 CONCLUSIONS

The pivotal conclusion from the empirical studies is that the phase of understanding value in the value process presented by Andersson et al.[170] and visualised in Figure 35 has been insufficient in the development of the web-based systems of this study.

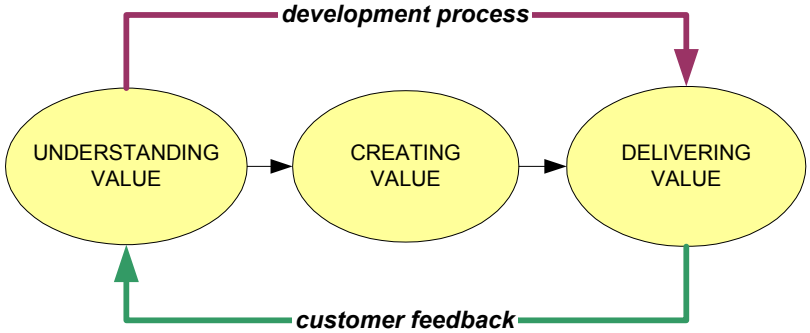

Figure 35: Part of value process modified from Andersson & Naurus

The entire value process consists of three steps: understanding value, creating value and delivering value. When the latter two only are involved in the value process, the products and services developed are likely to fail because they originate from an internal perspective rather than from the perspective of the customers.

A better understanding of customer needs can be achieved through a gap analysis based on inputs from interviews with customers and the supplier in combination with observation of the customer process.

7.1 Early link into the customers' processes

The research suggests using process mapping in order to understand needs expressed in the customers' processes and linking the internal supplier processes into these customer processes. By mapping the entire customer process even prior to the point of order, suppliers will achieve a better understanding of the customers' needs through the better knowledge of problems or issues experienced in that customer process. The early link into the customers' processes will also give the supplier the option of involving customers in the early stages of innovation, and letting them participate throughout the whole process. Furthermore, an early link to customers' processes will help the supplier to integrate all the steps in the value process in the development of web-based systems, as suggested in Figure 36.

[170] Andersson, J. & Naurus, J, (1998), *Business Market Management,* Prentice Hall, N.J

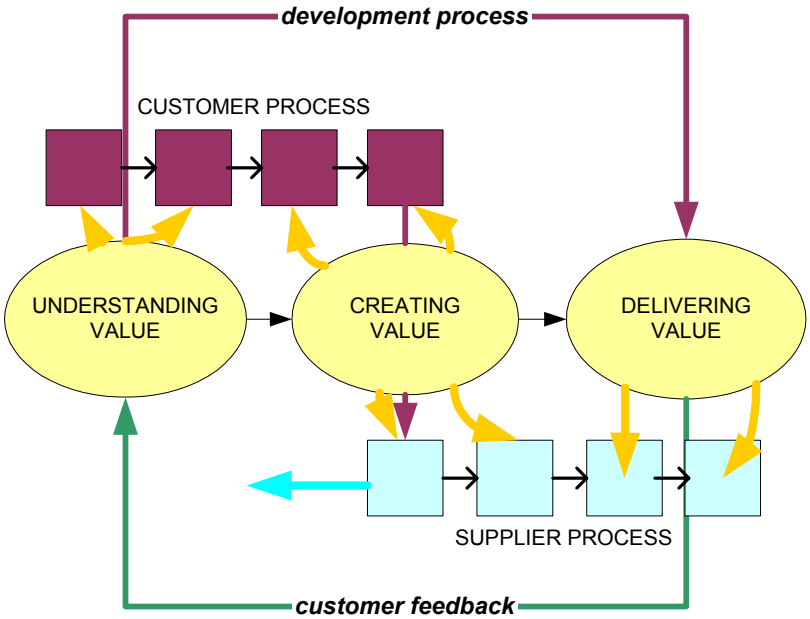

Figure 36: Combination of value process and customer/ supplier processes

7.2 Value creation through user profile customisation

User-specific solutions can be developed by segmenting users and mapping the different user groups in their processes. The creation of value products and services that are unique to different user groups will make it possible to customize offerings, and thus achieve higher volume for certain products, and hence standardised procurement. Value can be created for customers by bundling several products into fewer offerings. The bundling of products and services into user-specific offerings will make the offerings easier to present in a web-system. This will help make the web-system simpler and more comprehensible to customers.

7.3 Integration of customer needs

The suggestions from this study in integrating customer needs in the development of web-based system of can be

- Include the understanding phase in the value process
- Make joint development through early links into the customers' processes
- Create value through user-specific offerings and customer profiles

From the case gap analysis it can also be concluded that customer demands for the web-based systems of this study can be summarised as:

- Create the web system as a complementary channel to customers
- Create a B2B rather than a B2C solution in pharmaceutical retail
- Make the customer interface easy to explore, use and access
- Assure that web-based system provides sufficient and reliable information with good search functions.

8 FUTURE RESEARCH

8.1 Interdisciplinary product development

In order to create an interactive kind of product and service development, technology push and market pull need to be dynamically present and interrelated. If product development is seen only as a strong R&D capability in an organisation, or as technology advancement, the result might be a technology push, that creates products, or services that fail to meet user needs, and will not be accepted on the market. Yet on the other hand, if product development only focuses on meeting customer needs there might be a lack of technological progress and hence inability to create competitive-edge products or services.[171]

The use of innovation processes, although differently designed, is becoming more common among companies. In the early stages of an innovation process lies the task of collecting customer and competitor information as well as other factors in the surrounding world. This kind of data is often collected by a business-oriented department of a company or outsourced to a marketing research company.[172]

I believe that interdisciplinary links and mutual understanding among the disciplines of customer behaviour, marketing and technology are needed throughout the entire innovation process in order to succeed in this conversion.

This thesis and research have focused on the customer perspective of systems development for web-based systems. The outcome from that research is a suggested method for integration of customer processes in the value process and development process. The development of web-based systems involves systems development that includes both product and service.

Many people see packages simply as products. However, with a more holistic view of packaging, it can be viewed as a system that is built up by a product with aligned services. Such services could for example be product safety, product information, and user practicability to mention a few. [173]

As with the development of web systems, it will be important to involve customer understanding early in the development process in order to create value to the users. With this in mind it would be interesting to use the suggested methods of customer process mapping, to understand the demands customers place on packaging systems development in future studies. Furthermore it will be interesting to look for differences and similarities in the user needs for packaging systems intended for traditional retail as well as for web-based "e-tail"

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[171] Tidd, J, Bessant, J. & Pavitt, K. (1997) *Managing innovation – Integrating Technological, Market and Organizational change,* Wiley

[172] Tidd, J, Bessant, J. & Pavitt, K. (1997) *Managing innovation – Integrating Technological, Market and Organizational change,* Wiley

[173] Jönson, G(1995), *Se förpackningen ur ett helhetsperspektiv"*, Lundaforskare föreläser, Lund University Press

9 REFERENCES

Andersson, J. and Naurus, J., (1998), *Business Market Management,* Prentice Hall, N.J

Arbnor, I. and Bjerke, B., (1994), *Företagsekonomisk metodlära,* Studentlitteratur, Lund

Bauer, M.J., Poirier, C.C., CSC, Lawrence, L., Bermudez, J., AMR Reseacrh, (2001), *e-businesses: The Strategic Impact on Supply Chain and Logistics,* CLM, USA

Benesko, G., (1997), *Inter-Corporate Business Engineering*, Research Triangle Consultants Inc.

Benjamin, R. and Wigand R., (1995), *Electronic markets and the virtual value chains on the information superhighway,* Sloan Management Review, vol. 36, no.2, pp.62-72.

Bergström, A., (2000), *Internet – från revolution till vardagsanvändning,* Land du välsignade, Grafikerna Livréna, Kungälv

Bowersox, D.J. and Closs, D.J., (1996), *Logistical Management – The Integrated Supply Chain Process*, Mc-Graw Hill, Singapore

Bowersox, D.J., Closs, D.J and Stank, T., (2001), *Ten Mega Trends that will revolutionize supply chain logistics,* Supply Chain Management

Braa, K. and Vidgen, R., (1999), *Interpretation, intervention, and reduction in the organisational laboratory: a framework for in-context information systems research,* Accounting, Management and Information Technologies, vol.9, no.1, pp. 25-47.

Champy, J., (2001), *New products of new processes?*, Sales & Marketing Management, May 2001

Champy, J., Buday, R. and Nohria, N., (1996), *Creating the electronic community*, Information Week*, 6/10/96*

Checkland, P., (1993), *Systems Thinking, Systems Practice,* John Wiley &Sons, Chichester

Davenport, T., (1995), *Business process reengineering, its past, present and possible future,* Harvard Business School Publishing, Boston Massachusetts.

Denzin, N.K. and Lincoln, Y.S., (1998), *The Landscape of qualitative research, Theories and Issues,* Sage Publications

Deschamps, J-P, Ranganath Nayak, P, (1995), *Product Juggernauts*, Harvard Business School Press, Massachusetts

Edvardsson, B., Gustafsson, A., Johnson, M.D. and Sanden, B.,(2000), *New service development and innovation in the new economy,* Studentlitteratur , Lund

Eisenhardt, K., (1989), *Building Theories from Case Study Research,* Academy of Management Review, vol.14, issue 4, pp.532-550.

Ellram, L.M., (1996), *The use of case study method in logistics research",* Journal of Business Logistics, vol.17, issue 2, pp.93-138

Flint, D. J. and Mentzer, J. T. (2000), *Logisticians as Marketers: Their Role when Customer Desired Value Changes*, Journal of Business Logistics, vol. 21, no. 2, pp. 19-41.

Gale, B. T. (1994), *Managing Customer Value* The Free Press N.Y.

Graham, G. and Hardaker, G., (2000), *Supply Chain management across the Internet,* International Journal of Physical Distribution and Logistics Management, vol. 30, no ¾ pp. 286-295.

Greenwood, D.J. and Levin, M., (1998), *Introduction to Action Research,* Sage Publications.

Grönroos, C., (2000), *Service Management and Marketing,* Wiley & Sons Ltd.

Grönroos, Heinonen, Isoneimi, K., & Lindholm, M, (2000) *The NetOffer model: a case example from the virtual marketplace,* Management Decision, 38/4 243-252

Gummesson, E., (2000), *Relationsmarknadsföring: från 4P till 30R*, Liber Ekonomi

Huber, F., Herrmann, A. and Morgan, R., (2001), *Gaining competitive advantage through customer value oriented management,* Journal of Consumer Marketing, vol.18, issue 1, pp.41-53.

Hutt, E., Le Brun, R. and Mannhardt, T., (2001), *Simplifying Web segmentation*, Mc Kinsey Quarterly 3.

Isaksson, S., (2001), *Processbeskrivning genom tjänstekartan,* Licenciate Thesis, CTF Karlstad

Jönson, G., (1995), *Se förpackningen ur ett helhetsperspektiv"*, Lundaforskare föreläser, Lund University Press

Keller, P.J.; Jacka, J.M., (1999), "Process Mapping", *Internal auditor,* Vol.41, Issue 5, pp.60-65

Kent, J. L. Jr., and Flint D.J., (1997), *Perspectives on the evolution of logistics thought,* Journal of Business Logistics vol.18, issue 2, pp.15-29.

Kvale, S., (1997), *Den kvalitativa forskningsintervjun*, Studentlitteratur, Lund.

McIvor, R., Humphreys, P. and Huang, G, (2000), Electronic Commerce: re-engineering the buyer-supplier interface, *Business Process Management Journal,* Vol. 6 No.2, 2000, pp.122-138

Miller, T.E., (1996), *Segmenting the Internet*, American Demographics, July 1996

Mitchell, A., (2001), *Extending ECR to the consumer,* ECR Journal vol. 1 no. 1

Norrbom ,C., (1971), *Systemteori – en introduktion,* M&B Fackboksförlaget, Stockholm

Normann, R. and Ramirez, R., (1993), *From value chain to value constellation: Designing Interactive Strategy,* Harvard Business Review, July-Aug 1993

Parasuraman, A. (1991), *Understanding customer expectations on service,* Sloan Management review, spring 1991

Parasuraman, A., (1998), *Customer service in business-to-business markets: an agenda for research,* Journal of Business and Industrial Marketing, vol. 13, no. 4/5

Porter, M.,(2001), *Strategy and the Internet*, Harvard Business Review, 2001

Rigby, D.K., Reichheld, F.F. and Schefer, P., (2000), *Avoid the four perils of CRM*, Harvard Business Review, February 2000

Rowley, J., (1997), *Focusing on customers,* Library review, vol. 46, no2

Rummler, G.A. & Brache, A.P. (1995), *Improving performance – how to manage the white space on the organization chart*, 2nd edition, Jossey-Bass Publishers

Séror, A., (1996), *Action research for international information technology transfer: a methodology and network model,* Technovition vol.16, no.8, pp.421-429.

Stock, J.,(1997), *Applying theories from other disciplines to logistics,* International Journal of Logistics and Distribution Management, vol. 27, issue 9/10, pp.515-539

Söderman, M., (2001), *Product Representations,* Doctoral Thesis, Chalmers Göteborg

Tan Soo Jiuan, (1999), *Strategies for reducing consumers' risk aversion in Internet shopping,* Journal of Consumer Marketing, vol. 16, no. 2, pp. 163-180.

Tidd, J, Bessant, J. and Pavitt, K. (1997), *Managing innovation – Integrating Technological, Market and Organizational change*, John Wiley & Sons

Ulaga, W. and Chacour, S., (2001), *Measuring customer perceived value in business markets*, Industrial Marketing Management, no.30, pp.525-540

Ulwick, A., (2002), *Turn customer input into innovation,* Harvard Business Review January 2002

Warde, A., McMeekin, A., Randles, S., Southerton, D. and Tether, B., (2001), *Economic integration and practical consumption: some theoretical considerations,* Paper for European Sociological Association Conference, Helsinki 2001

Wikström, S., Lundkvist, A., Beckérus, Å., (1998), *Det interaktiva företaget – med kunden som största resurs*, Svenska Förlaget

Whyte, W.F., (1991), *Participatory action research,* Sage Publications.

Yin, R. K., (1994), *Case Study Research,* Sage Publications.

9.1 Web sources

www.clm1.org accessed September – 02
www.apoteket.se accessed June – 02
www.tetrapak.com accessed June – 02

9.2 Company sources

Andersson- Lehn, E. (2000), *Developing an internal service organisation into becoming better than the business,* Internal company document, Tetra Pak Business Support

Internal Document "*Future way of working"*

Internal process maps Tetra Pak Business Support AB

Internal presentation Tetra Pak Business Support AB

NKI (customer satisfaction survey) 2000, Tetra Pak Business Support AB

NKI (customer satisfaction survey) 2001, Tetra Pak Business Support AB

Prestudy of virtual pharmacy

Årsredovisning Apoteket AB år 2000

Årsredovisning Apoteket AB år 2001

9.3 Abbreviations

Expression	**Meaning**
TTM	Time to market
TQM	Total quality management
BPR	Business process engineering
JIT	Just in Time
B2B	Business- to –business
B2C	Business-to-consumer
CLM	Council of Logistics Management