2002

Reasons for Rejecting Extranet Technology in Channel Relationships: A Study of White Goods Retailers in Germany

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REASONS FOR REJECTING EXTRANET TECHNOLOGY IN CHANNEL RELATIONSHIPS: A STUDY OF WHITE GOODS RETAILERS IN GERMANY

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ABSTRACT

Extranets are the third wave of Internet technology. In business-to-business relationships more and more companies offer Extranets that – while maintaining privacy and confidentiality – make internal information available to business partners and offer process integration via the World Wide Web. Especially for small companies an Extranet is an appealing alternative to EDI technology.

Despite all the potential benefits, a large number of companies do not use or outright reject Extranet technology. The purpose of this exploratory study is to find out the reasons of non-use/rejection. A questionnaire-based mail survey was conducted in March 2001 among 2080 German retailers, all of them customers of a large manufacturer of white goods with access to the supplier's Extranet system. Roughly 1/3 of the respondents do not use the Extranet. Responses to open questions provide qualitative data that is analysed by cut-and-sort technique and content analysis.

The findings show that information quality and design quality of the Extranet system are relevant factors for the acceptance/rejection of an Extranet system. However, this is not the main reason. The quality of the traditional channel tremendously reduces the willingness of adapting that new technology. Especially the need for interpersonal contact is the main reason for system non-use among small retailers. Retailers who have frequent transactions with the supplier prefer face-to-face price negotiations. Larger retailers are more concerned about the lack of process integration of the Extranet channel.

Two managerial implications are deducted from the findings. First, companies should be very careful in deciding and implementing a channel strategy. Potential cost savings and service improvements is not of much value if the established communication with customers breaks down. Second, companies have to identify the differing customer expectations and communication profiles before choosing a strategy.

1. INTRODUCTION

The purpose of this study is to find out reasons of non-use and rejection of Extranet technology in business-to-business channel relationships. The studied Extranet was launched by a supplier firm as an additional service offering. The role of services is increasingly important in modern economies and remains a main business concern. Grönroos (2000b) speaks about the "Service Economy" where practically all firms, no matter what their core offering, compete with a service approach.

Driven by technology, new services have been developed. The Internet has created several opportunities for competitive advantages by new services. The delivery of such services are not primarily determined by human interaction, thus changing the whole services environment. The need for research is obvious. If Internet-based customer interaction or e-commerce is not understood, a company's service strategy may fail.

1.1. E-commerce and Extranet Technology

The definition of e-commerce used in this work is the "sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks." (Riggins and Rhee, 1998). This implies that, although the overall goal of e-commerce is the provision of products and services to the customer, it goes beyond simple buying and selling. E-commerce has a strong relationship component: the boundary-spanning aspect of electronic integration implies a higher level of cooperation and coordination between organisations. The two main classes of e-commerce are business-to-business (B2B) and business-to-customer (B2C) applications (Applegate et al., 1996). B2B e-commerce is a particular type of interorganisational system (IOS). Electronic data interchange (EDI) has been the most widely used B2B application over the last decade.

Today, e-commerce solutions are typically based on Internet technology. The Internet evolution can be distinguished into three waves (Bickerton et al., 1998): first was the browser-based Internet technology itself, second the introduction of intranets within organisations, and third are Extranets. An Extranet is a private network that uses the Internet infrastructure. It can be viewed as part of a company's intranet that is extended to users outside the company. Formerly internal information systems are made available to business partners. The access to Extranets is made through "Internet Portals" or "Web Channels", i.e. web-based, personalised and integrated systems that offer access to applications, contents and services (Chaudhury et al., 2001).

Extranets are partially replacing EDI technology. The barriers of EDI implementation, especially for small businesses, are avoided, and the Extranet application allows more information content and more functionality. Thus, Extranets offer a potential communication advantage, which could lead – from a relationship management perspective – to a sustainable competitive advantage. However, not all customers have the same receptivity for technology. A customer's preferences for or against the use of Extranets in service encounters could be based on his/her general bias toward technology. In most cases, e-commerce provides alternative service delivery channels, but traditional channels remain in place. Michael Porter recently stated:

> "The winners will be those that view the Internet as a complement to, not a cannibal of, traditional ways of competing" (Porter, 2001).

In any case, it is important to understand why an Extranet offering is rejected by certain customers. By knowing the downside and disadvantages, it helps a company to design a total service offering which leads to competitive advantage. Thus, the research question is: "What are the reasons for rejecting the use of Extranet technology in industrial channels?"

2. THE STUDY

The study was conducted on retailers of white goods in Germany in March 2001. The sponsoring company is a leading manufacturer of white goods. The B2B Extranet system concerned in this research began operating in Summer 2000. It is an Internet portal that is restricted to professional customers, i.e. dealers and wholesalers. The portal offers several functions, e.g. product and stock information, online sales and account information. Online sales via the Extranet are growing fast, but currently account for less than 10 percent of the manufacturer's overall sales in Germany.

2.1. The survey

The German retailer market roughly consists of 100,000 retailers. It was estimated that about 30,000 retailers were active in the white goods sector. The sponsor maintains relations to some 15,000 of them. The population was framed by the Extranet system database of the sponsoring company. A copy of the database was drawn for sampling purposes on 1-Feb-2001. It was therefore assured that at the time of the survey all firms in the sample had access to the Extranet for at least one month and could gather experience with the system. 5,814 users had access to the Extranet system. The records were checked on redundancies, i.e. retailers with more than one entry were purified. From the remaining 4,140 firms, a random sample of 2,080 was drawn. The sample size was chosen according to statistical considerations for quantitative analyses.

The survey was launched on 13-Mar-2001. The survey was announced by e-mail one week before it was sent out. The mail package consisted of a personalised cover letter signed by the sales director of the sponsoring firm and the researcher, an 8-page self-administered questionnaire, and a return envelope with postage. All documents were written in German language. Translation in German and backtranslation to English was done by professional translators. The questionnaire includes open and closed questions. The open questions inquired reasons for non-use or rejection of the offered Extranet system. Two reminders were done by e-mail, the first one 2 ½ weeks after the mailing of the questionnaires, the second one 2 weeks after the first reminder. The cut-off date was 7 weeks after the mailing. The date of response is recorded for a 'late respondent' analysis (Armstrong and Overton, 1977). The late-respondent analysis of quantitative data does not indicate any non-response bias.

The overall response was 443 (21.3%). 9 questionnaires were received after the cut-off-date and are not included in the analysis. 7 responses are invalid. From the remaining 427 valid responses (20.5%), 261 used the Extranet system (61.1% of valid responses) and 164 (38.4%) did not use it at the time of the survey. 2 responses did not answer the question. The Extranet usage pattern found in this study shows that the majority of the respondents were using the Extranet system for information purposes rather than online ordering. Further analysis was conducted with non-users only.

2.2. Research Methodology and Data Analysis

This article concentrates on the analysis of the collected qualitative data in order to answer the research question. Qualitative research has a strong history in information management research. In service-oriented marketing qualitative research it is also widely accepted. The Nordic school of thought (see, e.g., Grönroos, 2000a) has encouraged qualitative research and conceptual development and warns of jumping directly into theory testing:

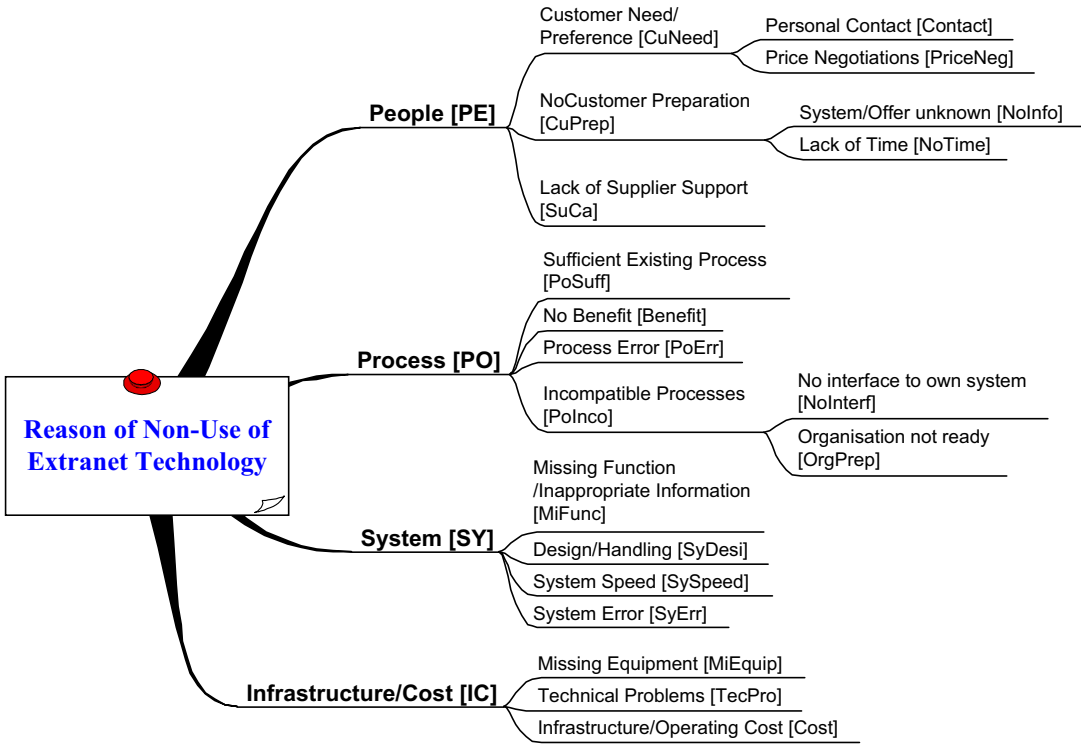
> "The sound development of context-oriented theories is a prerequisite for any meaningful testing of theories. No quantum leaps are made based on quantitative testing of pre-existing theories; only conceptual work can provide new perspectives suited to new or changing conditions." (Grönroos, 2000b, p.15)

This is the case in e-commerce-related research settings where little is known so far.

All answers to the open questions were compiled for the analysis. There are numerous ways of analysing qualitative data. Cut and Sort Technique and Content Analysis are applied in this research.

Content analysis offers a more positivist, analytical approach and is usually applied on the results of extensive qualitative surveys (Krippendorff, 1980). The number of occasions on which an issue is mentioned is counted. These counts are then used to demonstrate the importance of the issue (Remenyi et al., 1998, p.55). The content analysis was conducted in 3 phases. In the first phase, a multiple class hierarchical coding system was developed (see Figure 1). There were no coding instructions given prior to the analysis since assuming a priori category schemes impose the reality of the investigator on the data. Although theory suggests certain categories, the exploratory nature of this study recommends the chosen approach. Second, the answers were categorised according to the system. Finally, the categories were analysed quantitatively by inputting them into SPSS v10. Descriptive statistics is used for assessing the importance of each category.

Figure 1: Coding scheme of the content analysis



The data reduction process of content analysis causes reliability and validity problems. Weber (1990) remarks that reliability problems usually grow out of the ambiguity of word meanings, category definitions, or other coding rules. The reliability of the results of the content analysis derives mainly from contemplation of the human coders. In this study all three phases of the content analysis were performed by two independent judges which assures intercoder reliability, i.e. reproducibility, which is the minimum requirement of reliability (see, e.g., Weber, 1990, p.17). It also allows the quantitative assessment of achieved reliability (see Table 1). Conflicting coding due to cognitive differences of the two judges was arbitrated. The percentage of resolved disagreements between the two judges was small and therefore considered acceptable (see, e.g., Kassarjian, 1977, Belk, 1987).

The chosen sample size for the content analysis is relatively large and the sampling process was random, which supports the claim of sufficient external validity. Content Analysis was combined with Cut and Sort Technique in order to improve internal validity. The result of the cut and sort method are rich data and stories that support the quantitative research and help to build the overall picture and a deeper understanding. The story is left out of this article due to its length limitation.

Table 1: Inter-coder reliability of the content analysis

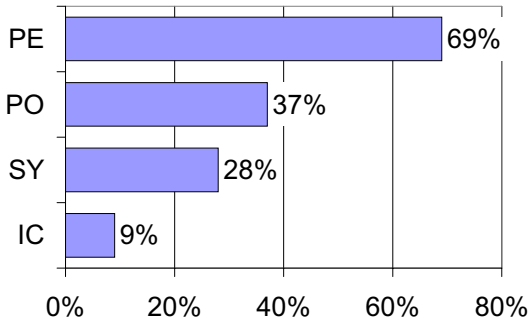
Category	Frequency				Inter-coder Reliability
	Coding by Judge A	Coding by Judge B	No. of Coding Differences	Arbitrated Coding	
PE					
CONTACT	47	54	7	49	.86
PRICENEG	15	18	3	16	.81
NOINFO	14	15	1	14	.93
NOTIME	26	31	5	26	.81
SUCA	8	5	3	8	.63
PO					
POSUFF	26	4	22	41	.95
BENEFIT	15	39	24		
POERR	3	2	1	3	.67
NOINTERF	7	5	2	7	.71
ORGPREP	10	4	6	10	.40
SY					
MIFUNC	8	10	2	8	.75
SYDESI	16	22	6	17	.65
SYSPEED	14	16	2	14	.86
SYERR	7	6	1	7	.86
IC					
MIEQUIP	11	9	2	10	.80
TECPRO	1	3	2	1	n.a.
COST	2	4	2	3	.33

3. RESULTS

Intercoder reliability (see Table 1) is high for most of the constructs. In some cases, the absolute number of counts is too low to establish any meaningful reliability (e.g. TECPRO, COST). The judgement differences were partly based on classification into close categories. E.g. judge A coded into ORGPREP while judge B preferred NOTIME. In one case, the differentiation into two sub-classes was given up after the arbitration process: the understanding of POSUFF of judge A and BENEFIT of judge B was practically identical. The statistics show the combined count of the two classes.

Four main categories of "Reason of Non-Use/ Rejection of the Extranet System" are identified in the overall sample of non-users: people-related, process-related, system-related and infrastructure/ cost related reasons. The main categories are split into sub-categories and – where regarded necessary – into sub-sub-categories. The importance of each category is estimated by the number of respondents referring to a category (see Figure 2). People-related reasons have been found to be the most important category, with roughly two third of all non-user respondents mentioning it.

Figure 2: Reason of Extranet Non-use/ Rejection – Main Categories



This is followed by process reasons (37%) and system reasons (28%). With 9% infrastructure/cost reasons play only a minor role. The importance on the more detailed sub-category level was also estimated. Table 2 exhibits the percentage of non-users referring to a certain category and gives some data examples.

Table 2: Reason of Extranet non-use/rejection – sub-categories

Category	% of Refs.	Example of Comment
CONTACT	30%	"I prefer face-to-face meetings." "Internet yes – personal care is more important." "Sales Representatives are dealing very well with our requirements."
POSUFF/ BENEFIT	25%	"It is too complicated to log in first ... I prefer sending a fax" "Order processing by fax or phone is still faster and easier" "As long as there are such reliable sales representatives, we do not see any reason to switch [to Extranet]. If a product is not available, sales staff recommends substitute products; which computer is capable of that?"
NOTIME	16%	"There was no opportunity yet to check out the system" "We are in the process of setting-up the system and will use it then."
SYDESI	10%	"too many steps, to much graphical knick-knack" "search function inadequate" "Problems with entering product details"
PRICENEG	10%	"Personal contact by telephone is better for negotiating terms" "I cannot negotiate with a computer."
NOINFO	9%	"We did not know that an Extranet exists"
SYSPEED	9%	"Download time too long" "On-screen editing is too slow"
MIEQUIP	6%	"We are currently building up the whole computer technology"
ORGPREP	6%	"Restructuring of offices, therefore not yet possible to using the Online tool"
SUCA	5%	"We are waiting since September [6 months] for an introduction"
MIFUNC	5%	"Price lists should be available for download." "Wrong orders cannot be deleted."
SYERR	4%	"We tried it but the system had too many deficiencies"
NOINTERF	4%	"This [Extranet system] is incompatible to our own system" "We place the sales contract in our own computer system and the order is processed automatically"
COST	2%	"Cost for Internet connection."
POERR	2%	"two attempts – no delivery"
TECPRO	1%	"System cannot be accessed."

In the next step of the analysis, the sample is split according to certain characteristics of the responding retailers. One split criterion is firm size. There is no significant difference in the rejection rate (see Table 3). However, as it is depicted in Figure 3, the reason for non-use of the Extranet differs significantly. People-related reasons are mentioned by 75% of all non-using retailers with 1-5 employees, but only by 24% of the larger retailers (>20 employees). The opposite is found for process-related reasons (see Table 4). Here the larger retailers point it out as the main reason (59%) for non-use, while only 29% of the small retailers see this as a problem.

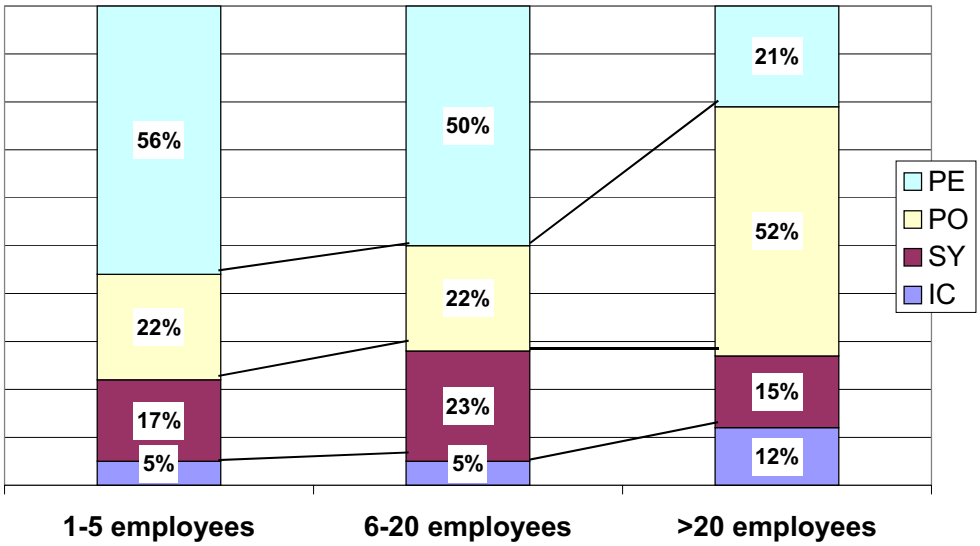
Table 3: Extranet non-use/rejection rate – split by retailer firm size

Firm Size	1-5 Employees	6-20 Employees	>20 Employees	Overall
Non-users	N=69 (of 171)	N=66 (of 185)	N=29 (of 66)	N=164 (of 422)
Rejection Rate	40%	36%	44%	39%

Table 4: Process incompatibilities as non-use/rejection reason – split by retailer firm size

Firm Size	1-5 Employees	6-20 Employees	>20 Employees	Overall
Non-users referring to process incompatibilities	N=4 (of 69)	N=7 (of 66)	N=11 (of 29)	N=22 (of 164)
Rejection Rate	6%	11%	38%	13%

Figure 3: Reason of Extranet non-use/rejection – split by retailer firm size



By breaking the process-related reasons down further, the picture becomes even clearer. Further split-sample analyses indicate that there is a higher acceptance of the Extranet technology when the frequency of transactions with the supplier are higher and the supplier is considered more important for the retailer's business. These findings are plausible. The sporadic customer does not see any benefit in Extranet usage. If the retailer's business depends largely on the supplier, the retailer is more willing to follow the technological developments. A tricky point here is the price negotiation, a reason of non-use mentioned more often by retailers with frequent transactions. Extranets make more sense for regular customers. Those however want more negotiations which Extranet technology does not offer.

4. DISCUSSION

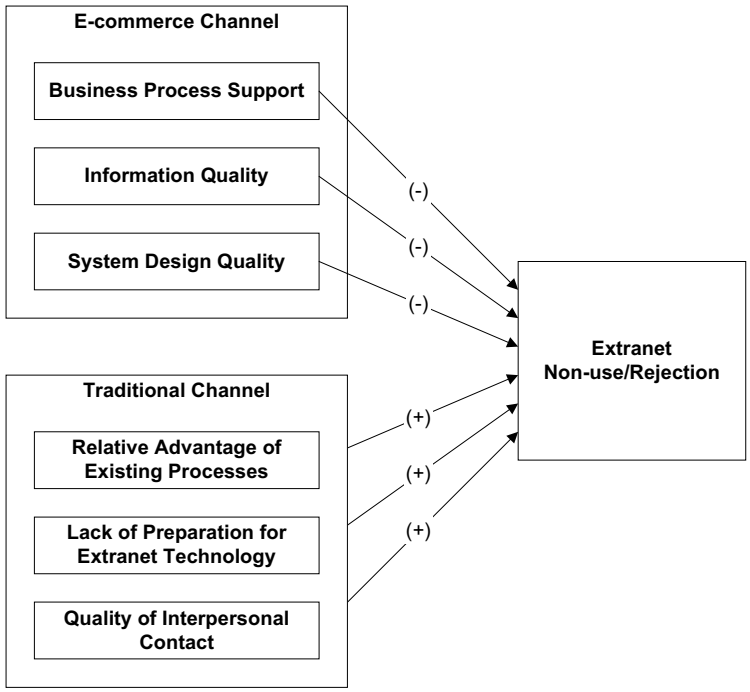
Figure 4 shows the conceptual model developed from these findings. Information quality and design quality of the Extranet system are relevant factors for its acceptance. Certainly, Extranet technology has its deficiencies and inadequacies and the chosen example has still room for technological improvement. However, it seems that this is not the main reason for non-use. Lack of support of the customers' own business processes is another important reason for rejecting the Extranet application. Especially large firms expect an integration similar to EDI. But again, this is not the full story. Rather, the quality of the traditional channel tremendously reduces the willingness to adapt to the new technology. Many of the retailers in the non-user group simply see no additional benefit for them in this Extranet application. Moreover, the quality of interpersonal contact and the possibility of face-to-face price negotiations is especially important for small retailers. This finding is also supported by the Extranet usage pattern reported by retailers who use the system: only 25% of them actually use the online order function on a regular basis with the majority using the Extranet merely as an information system.

Marketing literature acknowledges that communication plays a vital role in channel relationships. Mohr and Nevin (1990) described communication as "the glue that holds together a channel of distribution." Other authors (see, e.g., Mohr and Spekman, 1996, Das and Teng, 1998) support the view that communication is important for a successful business relationship. But communication must be rich (Spekman et al., 1998). Extranet technology is a new communication medium (Phairor and Hanmer-Lloyd, 2001), but it is not the only one. Face-to-face communication is richer and therefore difficult to replace (Celly and Frazier, 1996, Mohr and Spekman, 1996, see, e.g., Boyle et al., 1992, Melewar et al., 2001).

The study also reveals a dilemma for Extranet applications. Larger firms prefer EDI because there is a better integration within internal processes. The Extranet studied in this article targets small and medium-size retailers. However, smaller firms in particular especially prefer personal contacts.

The rejection of Extranet technology can be attributed to a mixture of cognitive and affective aspects. Though it remains open whether personal contacts are preferred only because of objective advantages like price negotiations, it is believed that there is more in face-to-face communication than simply pricing or objective information. The feeling of personal care and attentiveness is clearly important, even in the more rational oriented environment of B2B relationships.

Figure 4: Determining Factors of Extranet Non-Use/Rejection – a Conceptual Model



Of course, the system studied in this research was introduced only recently and perhaps needs more time to become an established, accepted and appreciated channel for retailers. The respondent firms were mainly small companies that may have a more emotive reaction to technology than medium or large companies. However, even from a pure cognitive perspective, the Extranet system may not provide sufficient benefits to switch completely from a traditional channel relationship to an e-relationship.

5. CONCLUSION AND MANAGERIAL RECOMMENDATION

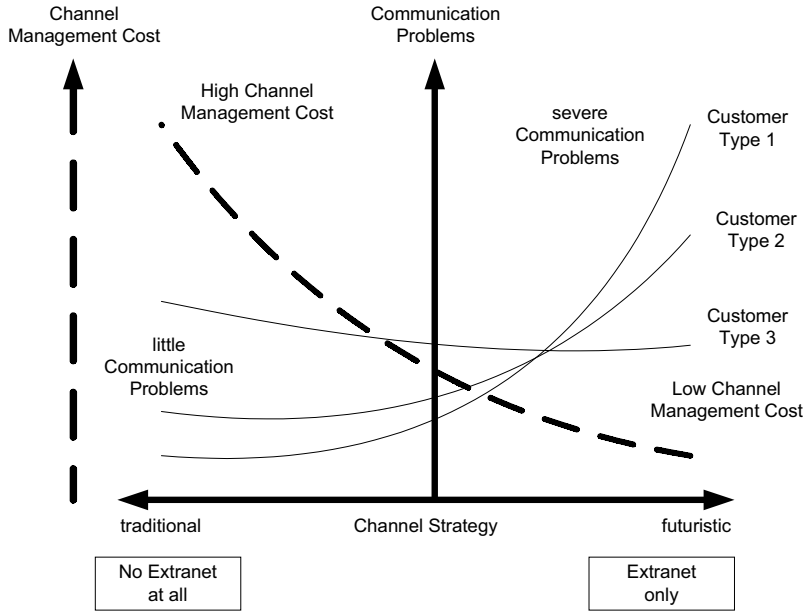
The chosen research topic is set in one of the most interesting areas of of e-commerce: B2B. The focus on a state-of-the-art Extranet system provides a substantial contribution to knowledge in an area that desperately needs more research. The main contribution of this work is the provision of a rich picture of a business customer's Extranet perception and usage by an in-depth qualitative analysis.

From the managerial viewpoint, a typical question raised is "when and how should the Internet be used as a sales-distribution channel and how quickly must we adopt new technologies?" (Frazier, 1999) The findings imply the need for a balanced development of e-commerce applications in B2B relationships. The channel communication and eventually the quality of the business relationship is determined by both people and information technology. The Extranet has an impact on the traditional channel and vice versa. The channel communication and eventually the quality of the business relationship is determined by both. Those companies that limit themselves just to the Extranet avenue may experience severe communication problems with their customers whereas others which do not pursue the potential benefits of Extranet technology may end up with non-competitive channel management cost.

The study's second implication is the need for a differentiated strategy which is illustrated in Figure 5. Companies expect to lower the costs of doing business and to increase value to customers by providing Extranet technology (Vlosky and Fontenot, 1999), for example, to implement a

differentiated CRM or service strategy. But the imposition of an e-commerce channel on customers who strongly prefer the traditional channel would certainly be counterproductive. Likewise, other customers may prefer a partner who offers such technology. The idea of channel communication may differ among customers (Barnes, 1997). Therefore, different customer profiles/segments have to be identified before choosing and implementing the appropriate channel strategy..

Figure 5: Managerial Implications – Channel Strategies, Costs, and Customer Profiles



5.1. Limitations and Directions for Further Research

There are several limitations to this research. First, the study is conducted with German retailers in the white goods market. Generalisability to supplier-retailer channels in other industries or countries is questionable. Certain goods may be easier to sell via the Internet than others. The German business culture and the long history of the supplier's relationships with its retailers (sample median: 13.5 years; sample mode: 10 years) could influence the findings. Second, only a certain Extranet system was studied. While limiting to one basic system is an advantage – it reduces the variance of information technology itself in the study and helps focussing on psychometric factors – it remains open whether the findings will be supported by other Extranet system studies. Third, the research was conducted with customers of one company. The market penetration of this company is very high in Germany. Nevertheless this restriction could create an unknown sampling error with regard to the overall target population. And finally, the exploratory nature of the study is a limitation in itself. Though results were quantified by content analysis and percentages discussed, these numbers must be interpreted carefully. Especially the split-sample statistics are precarious since the sizes of split-samples and the category counts of the split-samples are very small.

The discussion raises many questions and points out directions for further research. Quantitative research should always follow an exploratory study. Studying other Extranet solutions or other B2B technologies than Extranet applications such as e-marketplaces, would also provide valuable insight. For instance, one important inadequacy of the system studied was the lack of price negotiation possibilities. E-marketplaces claim to offer an "almost perfect marketplace", i.e. neo-classical theories could be applied. Transaction cost, e.g. cost of searching for the best offer, is strongly reduced. If the findings of this study are correct, however, the emotional aspect of face-to-face negotiations and the personal care aspect (being treated in a special way, getting a very individual bargain etc) do matter and e-marketplaces can be rejected for that very same reason. Finally, a longitudinal study of Extranet

usage in B2B could also provide more insight, since the system studied was introduced just recently and may need more time to become an established, accepted and appreciated system for retailers.

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