Customer service as a competitive marketing instrument: an investigation into the construction and measurement equipment supply chains

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In a business-to-business context customer service is not the magical trick that brings success easily. Confusion regarding the contents of the concept, lack of proper tools and no proper understanding of the buying process of customers result in few successful customer service programme implementations. Furthermore, the concept appears to have order qualifier characteristics suggesting that determining its effectiveness and role, as a competitive marketing weapon will be difficult. Using a survey in two supply chains the study investigates the role and status of customer service in marketing strategy and identifies its opportunities as a competitive marketing instrument.

INTRODUCTION AND BACKGROUND

The interface between marketing and logistics is often referred to as customer service. From the late seventies onwards the concept of customer service has received much attention from both scholars and practitioners. Its development covers the rise of the concept of customer service as a topic of interest, its development into an important marketing instrument and its merger into the concept of supply chain management in recent years. Customer service originally received much attention from a logistics perspective and subsequently has been defined in terms of physical distribution elements. Gradually a marketing component has been introduced which explicitly covers *"marketing communication"* aspects of the marketing mix (Tarasingh, 1992; Wouters, 2000). Aspects related to *"product"* and *"price"* are used variably. In practice customer service is predominantly defined in a general and broad marketing perspective: *"the customer is king"* (Lancioni, 1995)

Customer service is a very broad concept. Defining it in a clear and unambiguous way is quite difficult. Many authors have tried to master the concept each using their own definition. Perhaps the most influential definition was published by La Londe and Zinser (1976): *"…those activities that occur at the interface between the customer and the corporation which enhance or facilitate the sale and use of the corporation's products and services. It includes all of the things that a manufacturer does for a customer in moving a product from the end of production to the customer".*

The merger into the concept of supply chain management has supported the view that customer service is not a set of activities limited to distribution but a process involving all functions in an organisation (e.g. Ellram, 1991; Cooper & Ellram, 1993). At the same time case studies indicate that this merger still emphasises a cost approach rather than a competitive marketing strategy approach (Van Goor, 1998).

After 1990 the large flow of similar publications decreases. Although customer service elements are investigated after this period more alternative types of customer service definitions are used. In recent papers researchers more and more distinguish two components of customer service (Daugherty et al. 1994; Andraski & Novack, 1996 and Maltz & Maltz, 1998). One component is labelled *"bottom line or reliability service"*. It concerns the basic logistic performance regarding *"availability"*, *"delivery reliability"*, *"quality of deliveries"*, etc. The second component is labelled *"responsiveness"* and concerns an organisation's communicative skills and commercial flexibility.

Customer service is considered to be a vital concept with the potential to bridge the gap between the ever-expanding customer demands for flexibility (faster, more customised, more reliable, more choice) and, at the same time, the need to reduce production and distribution costs. By bridging this gap a sustainable competitive advantage can be achieved. This suggests that customer service is viewed upon as a competitive strategy instrument. Strategy in this respect refers to (Buzzell and Gale, 1987) all policies and key decisions that significantly affect performance and subsequently the competitive position (in terms of profitability or market share) of a company. In this respect customer service effectiveness is seen as the relationship between customer service performance and market response. Market response has been measured with indicators like performance levels, attributed importance ratings, customer satisfaction, attitude, repurchase intention, increase in market share and increase in turnover/margin. As far as the impact of customer service is concerned the focus has been on measuring its importance as a purchasing criterion and its performance on specific elements (e.g. delivery time). Only from the early nineteen nineties on

impact studies try to establish effects on customer satisfaction and company performance. Indeed, researchers increasingly use advanced statistical methods like LISREL to establish relationships between customer service performance, customer satisfaction (e.g. Innis & La Londe, 1994a) and company performance (e.g. Tracey, 1998).

A number of authors provide overviews of empirical results of customer service effectiveness research (Sterling & Lambert, 1989; Pisharodi & Langley, 1991; Lynch, 1992; Tarasingh, 1992; Tucker, 1994).. Specific business-to-business industries that have been investigated are: pump and valve industry (Cunningham & Roberts, 1974; Banting, 1976), chemicals and chemical industry equipment (Gilmour, 1982), office furniture (Sterling & Lambert, 1987 and Morash et al., 1997), plastic granulate (Lambert & Harrington, 1989), and several industries producing commodities (Kyj & Kyj, 1989). La Londe & Zinser (1976), La Londe et al. (1988) and Morris & Davis (1992) compared several business-to-business industries in their studies.

Regarding the impact of *"customer service performance"* on *"customer satisfaction"*, Lynch (1992) concludes that, on the basis of existing research a positive statistical relationship can be identified. However, the nature of this relationship is not yet very clear. Tucker (1994) states that very little research has examined the functional relationship between measures of *"customer service"* and dependent variables such as *"satisfaction"*, *"sales"* or *"profits"*. She argues that a weakness of most empirical studies linking customer service performance with market response is the incapability of dealing with underlying non-linearity's (curvilinear relationships). Thus most studies conducted assume that the relationship between *"customer service performance"* and *"satisfaction"* is linear. The linear function may either require that satisfaction scores be summed or that satisfaction scores be weighted by an importance factor. Levy (1981) finds clear evidence of non-linearity in his results. Using conjoint analysis, the findings suggest diminishing returns for increasing customer service performance.

Furthermore, no clear predictive relationship between *"satisfaction"* and its effect on *"buying behaviour"* has been found.

On the basis of the empirical findings it is concluded that customer service is a relevant vendor selection criterion. There is also some evidence of an impact of customer service performance on market share, turnover and profit (e.g. Innis & La Londe 1994b; Morash et al., 1997). However, the evidence is limited, fragmented and sometimes conflicting. Furthermore, most of this evidence applies to (fast moving) consumer goods and mostly in a retail context. Any substantial evidence regarding the order winning potential in a B2B setting is missing.

The problem at hand could therefore be summarised as follows. Generally, customer service is considered an important vendor selection criterion but this study tries to find out whether it also is the basis for competitive advantage in business-to-business situations.

RESEARCH OBJECTIVE AND FRAMEWORK

A study has been undertaken to investigate the possibilities of and the obstacles for customer service as a competitive marketing instrument in a business-to-business context. The objective of the study is to develop guidelines for industrial organisations to establish a customer service strategy. To achieve this objective, this study assesses the role of customer service as a competitive marketing instrument within the context of a supply chain. The main questions that have to be answered are:

- What is the relevance of customer service as a competitive marketing instrument in a supply chain context?
- What are the major determinants of customer service effectiveness?

The study involves two perspectives: an internal perspective and an external perspective. The internal perspective seeks to describe the role and status customer service has in marketing strategy of supplying organisations. The external perspective aims to determine the competitive power of customer service by measuring the sensitivity of buying firms for customer service and to determine the factors that influence that sensitivity. Wouters (2000), doing case studies with organisations in several positions in supply chains, observed two situations. In some cases customer service is seen as a set of requirements a supplier necessarily has to meet. If a supplier does not meet these demands it will not be short-listed. In this situation customer service is seen as an *"order qualifier[1]"*. In other cases customer service is seen as (a set of) performance specifications that are important but not automatically expected by the customer. An excellent performance on this type of service could lead to a competitive advantage, which leads to acquisition of new customers or retention (new orders) of current customers. In this situation customer service is seen as an *"order winner"*. This finding is supported by others (e.g. Cunningham & Roberts, 1974; Varadarajan, 1985 and Johnston, 1995). These findings suggest that customer service has *"order qualifier"* characteristics. The point is made that if customer service is indeed of *"order qualifying"* nature than any attempt to measure effectiveness is not valid. By definition an *"order qualifier"* is a necessary but not sufficient condition to increase market share, turnover or profit. A second issue that needs to be addressed specifically in a business-to-business context is the problem related to the fact that in long term relationships with repeated buying any excellent customer service performance is likely to be perishable (copied by competitors or expected by customers the next time).

[1] The descriptions of order winner/qualifier are in fact derived from Herzberg's Hygiene-Motivation theory (1972). Herzberg suggests that satisfaction and dissatisfaction are not opposite reactions towards good or bad performance on one particular activity. Satisfaction is achieved through two separate steps. The first step involves prevention and removal of "things" that dissatisfy, the so-called hygiene factors (order qualifiers). The second step is developing "things" that satisfy, the so-called "motivators" (order winners).

Dependent variable

In order to deal with these issues *"customer service sensitivity"* is introduced as a dependent variable. Gale (1994) offers a way to make such a variable operational by distinguishing seven steps in the life of a specific attribute; the *"attribute life cycle".* Gale incorporates the attribute life cycle in the Kano-model (Kano et al. 1984). A latent attribute is not visible or apparent. These attributes lie hidden in the minds of customers. Companies use probing questions and float ideas to customers in an attempt to uncover what customers will desire. A desired attribute is known but not currently supplied by any competitor. It will become a unique attribute when some supplier fulfils the need. As customers experience the benefits of this attribute without fully anticipating them, it will provide unexpected quality. For a unique attribute only one supplier, the pioneer, scores well. Therefore the pioneer commands a big advantage with the customer segment that weights this attribute heavily. An attribute is in the pacing stage when one supplier is ahead and weight is still shifting to this attribute. If it attracts enough weight, it will become a key attribute. Differences in performance on key attributes determine competitive advantage. As catch-up moves and/or declining weight take away the top performer's competitive edge, a key attribute becomes a fading attribute. An attribute reaches the basic stage when all suppliers in the buyer's consideration set perform well. No supplier has a competitive edge. The attribute is required, and typically receives little weight in the supplier selection decision. But buyers will react to a decline in performance on these attributes and remove that supplier's business from consideration. When a supplier pulls ahead of the pack on an emerging attribute at the beginning of a life cycle, customers tend to react very positively. When an attribute is in stages three to five, buyers make a more deliberate assessment of performance. When a supplier slips in performance on a basic attribute, buyers tend to react negatively (Gale, 1994).

Independent variables

Wouters (2000) on the basis of a literature review concludes that importance ratings for customer service elements vary by type of end-user industry, batch size of orders, usage volume, type of material purchased, market channel, geographic area and product category. Furthermore, case studies suggest that the position of the buyer-seller interface in the supply chain and the logistic sophistication of the customer could be relevant factors too. The relationships between de dependent and independent variables are depicted in figure 1.

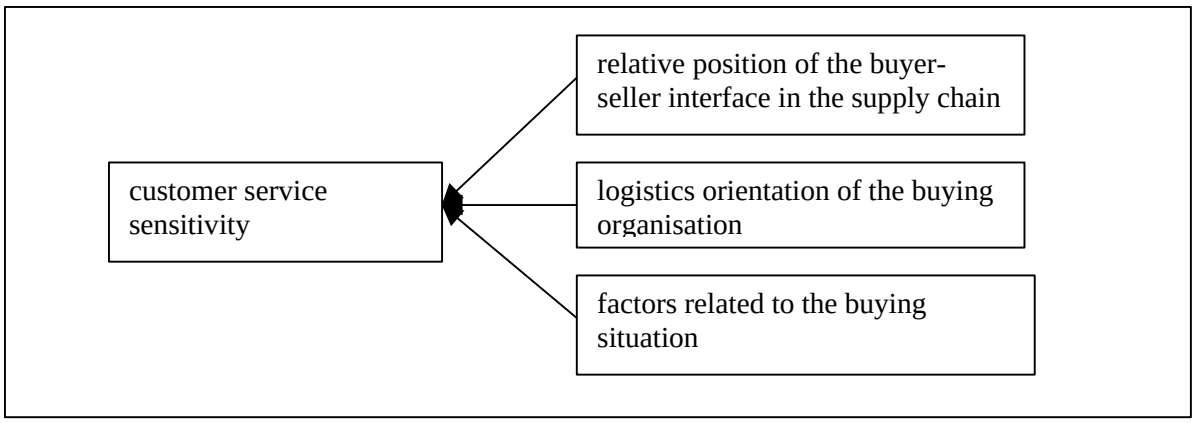


Figure 1: Relationships between dependent and independent variables.

To include product- and market characteristics a dependent variable using a classification into buying situations developed by Kraljic (1983) is used. This classification is based on the following two dimensions: the strategic purchasing vulnerability of the organisation and the supply market complexity. Based on these two dimensions four types of buying situations are distinguished: routine buying, leverage buying, strategic buying and bottleneck buying. This leads to the following proposition.

Proposition 1: Customer service sensitivity for buying organisations involved in a:

- routine buying situation will be in the *"desired"* or *"pacing"* stage
- bottleneck buying situation will be in the *"pacing"* or *"key"* stage

- leverage buying situation will be in the *"basic"* or *"fading"* stage
- strategic buying situation will be in the *"key"* of *"fading"* stage

The observation was made that the further away a company operates from the end users market the less dominant customer service is. Near the end users market customer service seems to be an *"order winner"*, further away it seems to be an *"order qualifier"*. Evidence found in case studies supports this view. Based on these findings the following proposition is defined:

Proposition 2: The customer service sensitivity of downstream participants in a supply chain is in the *"key"* or *"pacing"* stage, the customer service sensitivity of upstream participants is in the *"basic"* of *"fading"* stage.

Based on assessment of eight dimensions, Byrne and Markham (1994) define three stages of logistics development in which a company can be placed. In stage one of the model the major focus of the organisation is on managing outbound logistics (stock keeping and transport of finished goods). In stage two a company aims at integrating inbound and outbound logistics. Activities like order processing, customer service and stock control become increasingly important in this stage. Finally, in stage three, companies see the logistics process as the main driving force of all company operations as well as between companies. Logistic processes are top priority for management. According to their research only 10% of all companies can be placed in stage three and more than 75% in stage two.

In a supplier-customer relationship both parties can be in any of the three development stages. If both parties have the same logistic sophistication level there is a certain balance. If both parties are in stage one, logistically seen, this will be a static balance. Logistics is not a top

priority and other issues are more dominant. If both parties are in stage two (statistically the most likely situation since 75% of all companies are in stage two) the balance is precarious and continuously threatened by many problems and confrontations. Both parties are trying to find the best way of structuring and managing aspects like order processing, stock control and customer service. Often individual solutions are chosen that not necessarily contribute positively to the other party's processes. In a stage three balance both parties are logistically driven and a dynamic situation exists. Logistics is the main issue between supplier and customer and between competitors. New logistic concepts are continuously developed focusing on the customer's needs. If the supplier is logistically more sophisticated than the customer this is likely to result from an internally oriented, efficiency based, approach. In the case where the customer is logistically more sophisticated than its suppliers the customer is likely to have explicit logistic and customer service requirements. Since the supplier's logistic sophistication is low(er) this organisation is faced with continuously trying to keep up with increasing requirements. If the customer is in stage three, an extreme sanction-oriented attitude can be expected. In other words, buying organisations with a high(er) logistic sophistication are more likely to consider customer service performance as an order qualifier. Subsequently, the following proposition is made:

Proposition 3: Customer service sensitivity for buying organisations with a high logistic sophistication will in the *"basic"* or *"fading"* stage, customer service sensitivity for buying organisations with a low logistic sophistication will be in the *"key"* or *"pacing"* stage.

EMPERICAL STUDY

To answer the research questions the following approach is used. First explorative research in the form of case studies was conducted to investigate the relevant issues. Several cases are used and within each case data are gathered using several methods. The cases are chosen sequentially and vary on three criteria: relative position in the supply chain (downstream versus upstream), case perspective and scope. The following case studies have been conducted: facade systems manufacturer (January 1993 till April 1995), office furniture industry (January 1993 till March 1993), plastics granulate (January 1994 till June 1994), cement (applications): customer perspective (November 1994 till March 1995), cement (applications): supplier perspective (January 1995 till March 1995), mechatronic systems manufacturer (April 1995 till October 1995), protection gear manufacturer (June 1995 till October 1995). Although in most cases information is obtained using several sources and methods, face-to-face interviews based on a standard checklist are considered the basic approach in all cases. Interviews are held with several functionaries in the organisation depending on the perspective, the scope and the position of the company.

The findings from the explorative stage required further testing through a survey. The survey was set up to incorporate the supply chain perspective and was designed around two supply chains (cement applications and measurement equipment) involving at least two supplier-customer interfaces in each supply chain (see figure 2a and 2b). The supply chains were selected using two prime logistic criteria: *"value density"* and *"packaging density"*. The two selected supply chains, cement applications and measurement equipment are considered opposites on these two dimensions.

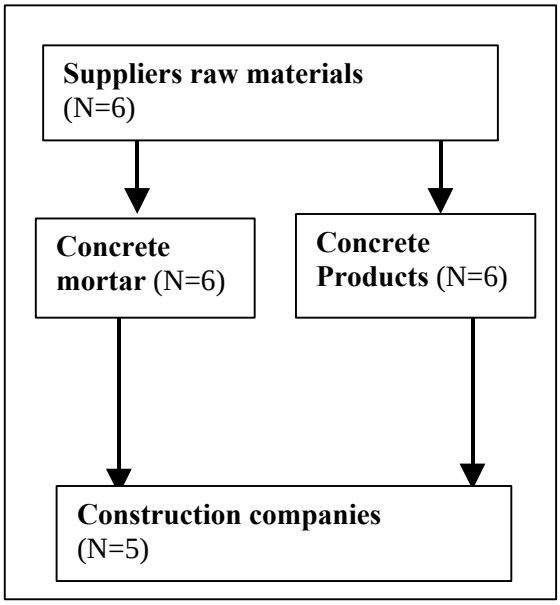
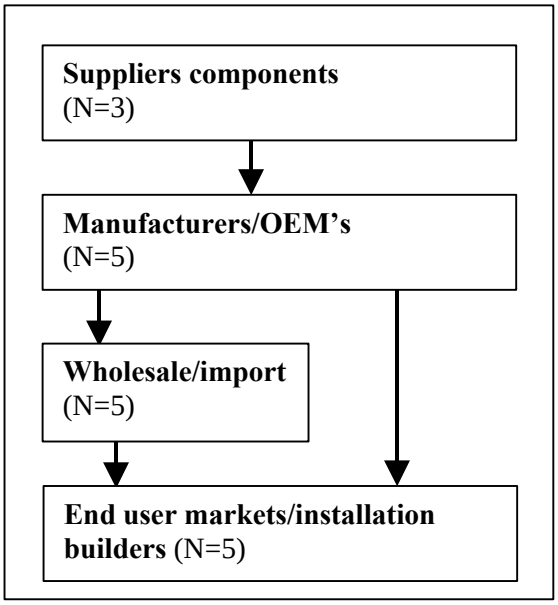


Figure 2a: Cement applications supply chain structure.



2b: Measuring equipment supply chain structure.

A net address base of 128 organisations was used which resulted in 41 organisations (32%) participating in the study. In figures 1a and 1b the net number of participating organisations is depicted in each cell. From each organisation, using face-to-face interviews, information was obtained regarding input (purchasing), throughput (logistics) and output (marketing). The survey was conducted from June 1998 till April 1999.

Role and status of customer service (internal perspective)

The three most important procedures employed for achieving customer service objectives are *"production flexibility"*, *"complaints handling"* and *"order processing"*. Some differences between the two supply chains exist. *"Production flexibility"* and *"physical distribution"* are the two most frequently mentioned procedures in the cement supply chain. In the measurement supply chain *"complaints handling"* and *"order processing"* are the most frequently mentioned procedures.

Generally, buyers are positive about their main suppliers' customer service performance. An average appreciation of 7.3 (scale from one to ten) is scored. This can be considered natural because these suppliers have, in most cases, been selected through a long process of working relationships. Most organisations use several suppliers for the product under investigation. Some differences in performance assessment occur within this set of suppliers.

"Problems with (keeping to) delivery times" appears to be the most frequent customer service problem encountered by purchasers in both supply chains. Interestingly, problems with *"product quality and production"* rank high in this listing as well. This seems to be especially a problem in the cement supply chain. In the measurement equipment supply chain, problems with *"order processing"* and *"communications"* occur as frequently as problems with delivery times.

The majority of the companies in the survey (54%) have experienced an increasing customer service performance of their suppliers in the past three years, particularly regarding *"customer orientation and communication*[2]*"*, and in a lesser extent on *"increased delivery time reliability*" (18%). Two thirds of the respondents expect ("hope for") a further customer service improvement in the next three years regarding *"customer communication"* (27%), *"product development/innovation"* (21%) and again *"delivery time reliability"* (18%).

Few explicit customer service programmes are found in the organisations participating in the study. Approximately 60% of respondents in the survey indicate that their customer service policies are only partially formalised. Nearly a quarter of the respondents do not have any

[2] Installing a help desk, improving the (processing of) paperwork, increased product know how, proper notification when delivery time problems occur.

explicit customer service policy in place at all and only one organisation indicates that a customer service policy is fully formalised. This limited formalisation further shows through the difficulty respondents have, when asked, to name explicit customer service objectives.

This is not to say that nothing is being done, on the contrary. Many of the organisations participating in the case studies and survey do their utmost to try and keep customers happy. Unfortunately, because a clear customer service programme is missing, customer service becomes an independent set of activities with nobody taking ultimate responsibility. This diminishes its effectiveness considerably. Several reasons that contribute to this situation are apparent in the findings and include a diffuse and unfocused customer service definition, lack of specific implementation programmes, customer service is seen as a quick fix rather than as a long term strategy, lack of necessary logistic sophistication to comply with logistic requirements.

In most instances suppliers have designated customer service as (one of) the main driver(s) for achieving competitive advantage. In this respect customer service has become a strategic issue. Marketing respondents are asked to select the single most important way of providing added value to customers. *"Providing added value through additional services"* is mentioned by the largest group of respondents (44%). These additional services include logistic services and after sales services. In second place comes *"expansion/innovation of the product range"* (36%). The two supply chains show a difference here. Within the cement chain *"providing additional services"* is mentioned more often whereas in the measurement equipment supply a stronger focus on product can be observed. The fact that more product differentiation is possible in the latter supply chain could account for this difference. However, when the perceived relevance of the concept is discussed in terms of doing business, customer service is

considered important but secondary to criteria as *"price"*, *"product performance"* and *"product quality"*. Suppliers in particular see customer service generally as an *"order qualifier"*: they must perform to requirements to get short-listed. At the same time these requirements keep increasing, pushing suppliers into a continuous struggle to keep up with expectations.

Customer service sensitivity (external perspective)

Following the findings regarding the external perspective are discussed. The discussion is limited to the scores on the dependent variable (customer service sensitivity) and results regarding the propositions.

Score profile of the dependent variable

In figure 3 the results for *"customer service sensitivity (css)"* from both perspectives is shown for the total sample and per supply chain. The stages *"latent"* and *"desired" do* not occur, indicating that the role of customer service seems to be firmly established both from a marketing and a purchasing perspective. Approximately two thirds of the organisations designate customer service as a relevant attribute for competitive advantage, stages (*"pacing"*) and (*"key"*). One third of the organisations consider its relevance as a competitive marketing instrument limited, stages (*"fading"*) and (*"basic"*). The stage "unique" is not included because in pre-testing respondents considered difficult to differentiate between the *"unique"* and *"pacing"* stage.

Results indicate a difference between the two supply chains. In the cement supply chain marketing seems to lag behind purchasing. In other words, for purchasing customer service

often already is in the *"fading"* or *"basic"* stage whereas marketing still considers it to be in the *"key"* stage. In the measurement supply chain to some extent the reverse is found. However, associative tests on the differences in the distribution of the scores show no statistical significance.

	Latent	Desired	Pacing	Key	Fading	Basic
css – marketing perspective total sample (N=31,mis.=2)	-	-	5 (17%)	15(52%)	4(14%)	5(17%)
css – purchasing perspective total sample (N=32, mis.=1)	-	-	7(23%)	14(45%)	7(23%)	3(9%)
css – marketing perspective cement (N=18, mis.=1)	-	-	3(18%)	10(58%)	1(6%)	3(18%)
css – purchasing perspective cement (N=17, mis.=1)	-	-	3(19%)	6(37%)	4(25%)	3(19%)
css – marketing perspective measuring equip. (N=13, mis.=1)	-	-	2(17%)	5(41%)	3(25%	2(17%)
css - purchasing perspective measuring equip. (N=15, mis.=0)	-	-	4(27%)	8(53%)	3(20%)	-

Figure 3: Scores on customer service sensitivity (css).

Analysing the propositions

Generally, the data obtained from the survey are of nominal or ordinal measurement level. Furthermore, the number of cases is limited. Therefore non-parametric tests are suggested. All propositions are analysed using one type of associative test (Dijkstra, 1995). In this test two distributions of scores measured on an ordinal scale variable are compared. Subsequently, a measure for the differences in distribution, *"theta*[3]*"*, is established. In figure 4 two examples are presented. In this figure the scores on the dependent variable *"customer service sensitivity"* are presented vertically (the categories *"latent"* and *"desired"* did not occur). Horizontally two clusters are defined: *"upstream organisations"* and *"downstream organisations"*. In each cell the number of cases is listed, and (between brackets) a percentage indicating the ratio per row.

[3] Theta can vary between 1.0 (strong positive effect) and -1.0 (strong negative effect).

	upstream in supply chain	downstream in supply chain
pacing	2 (50%)	2 (50%)
key	8 (61%)	5 (39%)
fading	3 (60%)	2 (40%)
basic	3 (60%)	2 (40%)

4a: no effect of position in supply chain.

	upstream in supply chain	downstream in supply chain
pacing	8 (100%)	0 (0%)
key	6 (75%)	2 (25%)
fading	1 (25%)	3 (75%)
basic	1 (14%)	6 (86%)

4b: positive effect of position in supply chain.

Figure 4: associative test comparing upstream organisations with downstream organisations.

If both distributions are similar the ratio between both clusters (upstream vs downstream) per row should be more or less the same for each row. A *"theta"* of 0.07 is calculated for the situation in figure 4a. This can be interpreted as no significant difference in both distributions. In figure 4b a situation is presented with varying ratios per row. In this case *"theta"* is 0.91. This indicates a strong positive effect. Or in other words, this outcome suggests that upstream organisations have a higher sensitivity to customer service then downstream companies

Input for these tests are the scores on *"customer service sensitivity"* from both marketers (proposition two) and from purchasers (propositions one, two and three). In the following section the results on these tests are discussed for the three propositions. Per proposition a table is provided which lists the various groupings used, the resulting thetas and a measure for the statistical significance (z score).

Proposition 1

Regarding the purchasing situation the interviews focus on one purchased type of product. This varies according to type of supply chain and supply chain level. Because of this *"zooming in"* on a particular type of product the results do not necessarily reflect the complete purchasing

situation of the companies in the survey. Half of the purchasing situations are categorised according to the Kraljic-classisfication as *"leverage buying"*, particularly in the cement supply chain (buying cement, sand and gravel). In the measurement equipment supply chain the dominant purchasing situation is *"strategic buying"*, particularly on the wholesale/import level. This latter situation is probably caused by the fact that several of these organisations are in effect a sales office of one or of several affiliated OEM brands. To examine proposition 1 various groupings are used in the analyses. The results are shown in figure 5.

Groupings for proposition 1	**theta (z-score)**
routine and bottleneck vs. strategic and leverage	-0.54 (-1.71)
routine and leverage vs. strategic and bottleneck	-0.34 (-1.30)
routine and strategic vs. bottleneck and leverage	0.01 (0.04)
bottleneck vs. total	-0.07 (-0.15)
leverage vs. total	0.01 (0.05)
strategic vs. total	0.42 (1.26)
routine vs. total	-0.89 (2.31)

Figure 5: Theta- (and z-) scores for proposition 1.

The strongest relationship is found in the last grouping, *"routine versus total"*. However, the number of cases in the routine-group is very low. Therefore, any results including this group have to be interpreted with caution.

The most interesting effect ($p = 0.044$) can be observed with grouping one: *"routine/bottleneck versus strategic/leverage"*. This represents the divide on the *"strategic purchasing vulnerability"*-dimension of the Kraljic-matrix. In other words, purchasing situations involving routine and bottleneck products have different customer service sensitivity compared to purchasing situations involving strategic and leverage products. Interestingly, the nature of the relationship is different to what was expected. *"Customer service sensitivity"* with strategic and leverage products is more likely to be in the *"key"* or *"pacing"* stage compared to routine

and bottleneck products. Some allowances have to be made regarding this observation due to the low number of cases in the routine group. On the other hand however, a relevant effect is observed when the strategic group is compared to the total.

Proposition 2

To investigate proposition 2, groupings are made involving combinations as presented in column one of figure 6. In the following column the results on *"theta"* and *"z"* are shown. The pattern present in figure 6 is consistent with the proposition.

Grouping for proposition 2	**theta (z-score)**
downstream = construction comp. and installation builders versus **upstream** = suppliers raw materials/components.	0.27 (0.70)
downstream = construction comp. and installation builders versus **upstream** = mortar/prefab producers&OEM's.	0.27 (0.82)
upstream = suppliers raw materials/components versus total group	-0.31 (-1.02)
midstream = mortar/prefab producers&OEM's versus total group	-0.19 (-0.75)
downstream = construction comp. and installation builders vs total group	0.07 (0.25)

Figure 6: Theta- (and z-) scores for proposition 2.

According to the data the two upstream levels in the supply chain (suppliers raw materials/components and mortar/prefab producers & OEM's) appear to be less sensitive to customer service. In the last three groupings, each level is compared to the total group results. The effect appears to decrease when the supply chain level moves further downstream. Therefore the data suggest some effect of *"supply chain level"* on *"customer service sensitivity"*. However, the effect is not very strong and is not statistically significant.

Proposition 3

Regarding the three stages of logistic sophistication 9% of the total sample are in stage 1, 70% in stage 2 and 21% in stage three. This very accurately matches the percentages mentioned by Byrne and Markham in their paper (1992; stage 1 = 10%, stage 2 = 75% and stage 3 = 15%).

Some minor differences between both supply chains exist but the pattern is similar. With construction companies (4 missing) and installation builders/end users (2 missing), project management is the dominant production control system. This type of work makes it difficult to assess the logistic sophistication in the three stages and explains the number of missing.

For proposition 3 data are used which assign organisations to one of three stages of the logistic sophistication model. In order to achieve relatively substantial sample sizes groupings are used according to the scheme presented in column one in figure 7. *"Customer service sensitivity"* is measured both at the purchasing level (represented in the second column in figure 7) and at the marketing level (represented in the third column in figure 7).

	customer service sensitivity purchasing perspective	**customer service sensitivity marketing perspective**
stage 2 + 3 vs stage 1	-0.10 (0.22)	-0.03 (0.08)
stage 3 vs stage 1 + 2	-0.50 (-1.57)	-0.45 (-1.17)
stage 2 versus total	0.14 (0.58)	0.10 (0.41)
stage 3 versus total	-0.40 (-1.23)	-0.38 (-0.97)

Figure 7: Theta- (and z-) scores for proposition two.

A review of the results in figure 7 shows that an effect of logistic sophistication on *"customer service sensitivity"* can be observed. The effect appears to be strongest moving from stage 2 to stage 3. Only one grouping (stage 3 vs stage 1+2) shows a modest level of statistical significance ($p = 0.059$) for the purchasing perspective, the other observed effects are not statistically significant. The nature of the relationship observed is consistent to what was defined in the proposition. In other words organisations with a high level of logistic sophistication are more likely to be in the less sensitive to customer service (*"basic"* or *"fading"* stage). The results from both perspectives (marketing and purchasing) are similar.

CONCLUSIONS

The study shows that although most of the participating organisations have made a strategic issue of customer service, hardly any of the organisations possess fully developed and implemented customer service programmes. Several reasons for this have been identified and include issues regarding the use of unfocused definitions of customer service, application problems with (theoretical) customer service programmes, and a combination of too high expectations and limited strategic embedding in the organisation. Thus, in theory, supplying organisations see customer service as a competitive marketing instrument. In practice, however, the study confirms that it is still often predominantly seen as an order qualifier. Companies when buying, indicate that customer service clearly has order winning capabilities. Interestingly, the order winning potential lies in the responsiveness of organisations, which refers to the communication and information aspects regarding the supply process. Therefore the conclusion is that customer service is undoubtedly important during the buying process but its order winning capability is often not explicitly addressed.

The fact that customer service has order qualifying characteristics affects the issue of its effectiveness. A dependent variable, *"customer service sensitivity"*, is introduced to deal with this. The explorative research suggested several factors that could influence the customer service sensitivity:

- customer's logistic sophistication
- factors related to the buying situation
- position of the buyer-seller interface in the supply chain

In the survey these findings were investigated further. Both internal aspects, customer service strategy and capabilities, and external aspects, buying firm's sensitivity to customer service are covered. The results mostly confirm the findings from literature and explorative research. Evidence on the factors determining buying firm's sensitivity to customer service is less conclusive. Generally, sensitivity for customer service seems highest downstream in supply chains, with buying firms with low logistic sophistication and buying situations involving strategic products.

Furthermore the results suggest that market and product characteristics are dominant factors. Market characteristics relate to the total situation in a supply chain not just to individual supplier-customer relationships, aspects like power balance, market transparency, type of buying behaviour, etc. are all-important. In particular the power distribution in a supply chain should be taken into account.

Based on the findings it can be concluded that organisations cannot afford not to have a proper customer service strategy. Based on Håkansson (1982) four explicit customer service strategies are suggested: customer integration, customer adaptation, logistical precision and standard customer service. Two parameters are developed to determine which customer service strategy to select. The first parameter is labelled *"customer service sophistication"*. The parameter is based on an internal assessment of an organisations logistic sophistication and its service orientation. The second parameter is labelled *"customer service sensitivity"* and is an external assessment of the opportunities for customer service as a competitive advantage.

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