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Does quality pay?
Relationships between antecedents of customer satisfaction,
customer satisfaction, customer loyalty and customer
profitability at the individual level

by

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CONTENTS:

0. ABSTRACT[1]

Superior quality is supposed to be positively related to superior business performances. This conception forms the cornerstone of Total Quality Management (TQM). At the individual customer level superior quality is supposed to be positively related to customer satisfaction, the key driver of customer loyalty and customer profitability. According to this way of thinking (what I earlier have referred to as "the paradigm of customer satisfaction"), the companies that are able to increase the level of satisfaction for their customers can in the long term expect a positive effect with respect to profitability. Nevertheless, only a few studies have examined the relationships between quality and profitability, and hardly any study has dealt with this relationship at the customer level. In this working paper the focus is on the individual customer with respect to the relationships between antecedents of customer satisfaction, customer satisfaction, customer loyalty and customer profitability. The following hypotheses are tested: H_1: The higher the perceived quality for the customer tends to be, the higher is his (or her) satisfaction; H_2: The more satisfied a customer tends to be, the higher is his loyalty; H_3: The more loyal a customer tends to be, the higher customer profitability is obtained; H_4: The more satisfied and loyal a customer tends to be, the higher is the obtained customer profitability. As expected, the findings (results) provide strong support for the four hypotheses. However, the relationships between the variables seem to be non-linear (increasingly downward sloping), and only valid beyond certain levels or thresholds. By segmenting the sample of customers into subgroups according to levels of customer satisfaction and customer loyalty, it is found that the customers with satisfaction and loyalty levels above the medians seem to be more preoccupied with quality than the rest of the customers. In addition, the estimates also suggest that these customers are much more profitable than other customers. Taking into consideration the high and conclusive statistical validity of the findings, there appears to be strong support for the "quality paradigm". Thus, it may be asserted that "quality does pay".

1. INTRODUCTION

Superior quality is supposed to be positively related to superior business performances. This relationship is perceived to be so self-evident that it is taken for granted by many. The lesson is that firms should be focusing on total quality management (TQM) in order to cope with strong competition. Many guidelines and models have been used in order to help managers to focus on the various aspects of business activities that have to be taken into consideration when striving for better TQM (see e.g. Garvin, 1991; Heaphy & Gruska, 1995; Oakland, 1995; Mohr-Jackson, 1998; EFQM[2] Model for Business Excellence, 1999).

At the individual customer level superior quality is supposed to be positively related to customer satisfaction, the key driver of customer loyalty and customer profitability. According to this way of thinking ("the paradigm of customer satisfaction" which forms the cornerstone

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[1] This working paper is based on Helgesen (1999a), a dissertation for obtaining the degree doctor oeoconomiae at the Norwegian School of Economics and Business Administration, Bergen. The problems that are addressed in this working paper are among the topics which are discussed in the dissertation, but the focus has been somewhat changed. Studies (literature) that are more quality related have been examined and further analyses of the data sets have been carried out in order to answer the research questions and the formulated hypotheses.

[2] EFQM = European Foundation for Quality Management.

of the marketing concept), the companies that are able to increase the satisfaction of their customers can in the long term expect higher profitability (see e.g. Felton, 1959; Ames, 1970; Bagozzi, 1975; Houston, 1986; Webster, 1988; Grønroos, 1990).

In spite of the fact that superior quality is supposed to have a substantial influence on business performances, the reality is that only a few studies have been analyzing the relationships between quality-concepts and profitability (see e.g. Main, 1980; Shetty, 1987; Capon & al, 1990; Rust & Zahorik, 1993; Oliver, 1996; Reed & al., 1996; Zeithaml & al., 1996; Shields, 1997). Thus, evidence for this "much talked about relationship" may be questioned.

The focus of this working paper is the relationships between antecedents of customer satisfaction, customer satisfaction, customer loyalty and customer profitability at the individual customer level. The context is the order-handling industry which in this working paper is four Norwegian exporters of fish products and their customers (Helgesen, 1999a; 1999b). This industry is characterized by almost world-wide export activities with respect to product markets (geographical areas). In each of these product markets a lot of actors participate, both on the buyer side as well as on the seller side. The competition in the fishing industry is strong both for Norwegian competitors and for foreign companies.

2. LITERATURE REVIEW

Customer relationship orientation is based on conceptions about positive cause- and effect re-lationships between the following main variables: (1) antecedents of customer satisfaction, (2) customer satisfaction, (3) customer loyalty, and (4) customer profitability, cf. exhibit 1.

Exhibit no. 1 provides an overview of the main concepts based on what may be called "customer relationship orientation". According to this way of thinking the customers are in general believed to be satisfied when the offered products meet the needs, desires and requests of the customers, and the firm is satisfied when the exchanges result in profitability (see e.g. Felton, 1959; Ames, 1970; Bagozzi, 1975; Houston, 1986; Webster, 1988; Grønroos, 1990; Petro, 1990; Kohli & Jaworski, 1990, 1993; Narver & Slater, 1989, 1990, 1994; Storbacka & al., 1994).

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Customer relationships[3] have been analysed by way of lots of models including different concepts, antecedents, intermediary variables, etc. This information has been used in different ways (see e.g. Oliver, 1996; Rust & al., 1996; Fornell & al., 1996; Anderson & al., 1997; 1994; Lee & Cunningham, 1996; Gummesson, 1995; Leuthesser & Kohli, 1995; Evans & Laskin, 1994; Parasuraman & al., 1994; 1988; Anderson & Sullivan, 1993; Fornell, 1992; Bitner, 1990; Hildebrandt, 1988; Zeithaml, 1988). The focus of this article is on the main concepts. Consequently other concepts are either not addressed or only discussed briefly.
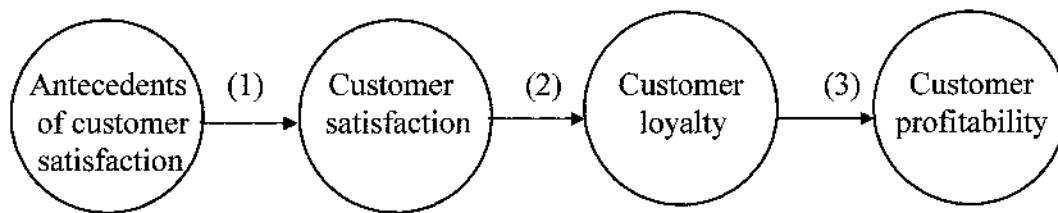
Exhibit 1. Customer relationships – main concepts and supposed causalities.

2.1. Antecedents of customer satisfaction

The concept of customer satisfaction has for years formed the cornerstone of the marketing concept (see e.g. Drucker, 1954; Felton, 1959; Levitt, 1960; Lear, 1963; Ames, 1970; Houston, 1986; Grönroos, 1989). Thus, measurements and analyses of customer satisfaction and its antecedents are not a new phenomena. A lot of studies have been carried out in relation to this topic (see e.g. Tse & Wilton, 1988; Yi, 1990; Hausknecht, 1990; Myers, 1991; Parasuraman & al., 1988; 1994; Johnson & Fornell, 1991; Ryan & al., 1995; Oliver, 1996; Danaher & Haddrell, 1996; Fournier & Mick, 1999). To explain variations in customer satisfaction several antecedents can be taken into consideration, for example price, quality, service, expectations, etc. In addition, it is usual to distinguish between concepts that are objectively measurable and concepts that are perceived («perceived quality», «perceived price», etc.).

According to the approaches above, the quality-concept is not at all unambiguous (see e.g. Juran, 1988; Garvin, 1988; Bitner & al., 1990; Anderson & al., 1994; Johnston, 1995; West-

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[3] Customer relationship orientation is closely related to market orientation. According to the last group of approaches, customer responses are perceived to be only one set of consequences of the market orientation by a firm. Two other sets of consequences are employee responses and business performances (see e.g. Kohli & Jaworski, 1990, 1993; Narver & Slater, 1990; Jaworski & Kohli, 1993; Ruckert, 1992; Diamantopoulos & Hart, 1993; Slater & Narver, 1994; Greenley, 1995a; 1995b; Selnes & al., 1996; Pelham & Wilson, 1996). However, these empirical studies are not analyzing relationships at the customer level. Since this level of analysis represents the most important area of the other main group of approaches, the rest of this working paper is based on this literature, which is based on the customer relationship orientation.

brook & Peterson, 1998; Swan & Bowers, 1998; Hellofs & Jacobson, 1999). Thus, the concept is understood and defined in different ways: "As conformance to requirements" (Crosby, 1979), "As superiority or excellence" (Zeithaml, 1988), or "zero defects – doing it right the first time" (which is in accordance with the Japanese philosophy) (Goh & Xie, 1994). By extension, perceived quality can be defined as the judgement of buyers or users with respect to "conformance to requirements", "overall excellence or superiority", etc., or "as a global judgement of the "current offering" of the suppliers (Steenkamp, 1989). Furthermore, the quality-concept may be divided into sub-concepts that to a certain degree are interrelated; transcendent quality, product based quality, production based quality, value based quality, etc. (see e.g. Crosby, 1979; Garvin, 1988; Gummesson & Grönroos, 1989; Troye, 1990; Oliver, 1996).

According to Garvin (1988) quality is not determined by the suppliers of products and services, but by the customers/users. Their judgments with respect to the degree of fulfillment of needs and of expectations are decisive for their quality experience. When judging products and/or services the customers compare different products and services from different suppliers. Even if these judgements presumably are confined to only one set of the attributes, Garvin (1988) asserts that the following eight dimensions should be considered: (1) performance, (2) features, (3) reliability, (4) conformance, (5) durability, (6) serviceability, (7) aesthetics and (8) perceived quality. This proposition may be said to be in accordance with the "SERVQUAL"-approach (Parasuraman & al., 1988; 1994).

In order to describe and judge quality, Gummesson & Grönroos (1989) offer a model consisting of four parts: (1) quality of constructions (products and services), (4) quality of production, (3) quality of deliveries and (4) quality of relationships. Comparing with Garvin (1988), Gummesson & Grönroos introduce two new concepts, that is quality of deliveries and quality of relationships. This approach is for a large part in accordance with Evans & Laskin (1994) that points to the following aspects as the most important concerning quality and relationship marketing: «(1) understanding consumer expectations, (2) building service partnership, (3) empowering employees, and (4) total quality management». However, there also exists a lot of other contributions focusing on various aspects of quality of the antecedents of customer satisfaction (see e.g. Cravens & al., 1988; Cooper & al., 1991; Fornell, 1992; Fornell & al., 1996; Oliver, 1996; Hayes, 1997).

A central topic within the special field called consumer behavior has been the distinction between quality and customer satisfaction (Zeithaml, 1988; Anderson & al., 1994; Oliver, 1996). Anderson & al. (1994) have asserted that there are many reasons for perceiving customer satisfaction and quality as distinct concepts. First, the customers use personal experiences with a product or a service in order to judge their satisfaction. On the other hand, perceptions of quality may exist independent of consumption experiences. Second, customer satisfaction will always depend on customer value, where the value to the customer can be viewed as the ratio of perceived quality relative to price, or benefits received relative to costs incurred. Consequently, customer satisfaction will also depend on the price-level, whereas the quality of a product or a service is not generally considered as being dependent on the price. Third, quality may be perceived as being tied to the existing offer of products and services, while customer satisfaction is based not only on current experience but also on past experiences, as well as future or anticipated experiences. Finally, it may be asserted that quality is one of the reasons for or antecedents of customer satisfaction (see also e.g. Anderson & Sullivan, 1993; Gijsbrechts, 1993; Bishop jr., 1987; Forbis & Mehta, 1981). It should be mentioned that Oliver (1996) also distinguishes between quality and customer satisfaction analogously with the approaches of Anderson & al. (1994).

According to the discussion above, there is no clear consensus concerning the definitions and the measurements of quality. In this working paper quality is viewed as the quality perceived by the buyers of products and services, and it is assumed that quality can be measured as a separate concept that consists of various attributes which are perceived as antecedents of customer satisfaction.

In addition to perceived quality, the level of customer satisfaction also depend on other aspects that are primarily[4] (perceived) prices (price components) (see e.g Gerstner, 1986; Monroe & Dodds, 1988; Zeithaml, 1988; Curry & Riesz, 1988; Rao & Monroe, 1988; Lichtenstein & Burton, 1989). Zeithaml (1988) claims that "price is what is given up or sacrificed to obtain a product". Defining price as a sacrifice is consistent with conceptualizations by other pricing researchers (see e.g. Chapman, 1986; Mazumdar, 1986; Gijsbrechts, 1993; Grönroos, 1997).

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[4] Other elements such as expectations may also be taken into consideration (see e.g. Anderson & al., 1994; Oliver, 1996; Johnson & al., 1996).

According to the approaches above the customers are judging the offer of a supplier by comparisons, which means that the customer is comparing the customer value that the product or the service represents relative to the customer values of other products or services that are also meeting his requirements («the concept of reference price», Gijsbrechts, 1993). Consequently, one may say that the customers are preoccupied with comparisons of customer values (V). That implies comparison of attributes (A) and prices/sacrifices (P) for various offers. Based on this way of thinking, the following model may be formulated:

(1) $V = V(A,P)$

The customer makes subjective judgements of the values of various offers (products) taking into consideration both attributes and prices, that is the relationships between the accumulated advantages and the accumulated sacrifices over time. Customer values are created when the perceived values of the attributes exceed the perceived sacrifices of a given solution (exchange). A customer is only interested in exchanges when the value to the customer is positive. The greater the perceived customer value is to the customer, the greater is his incentive for an exchange (see e.g. Lancaster, 1966; Forbis & Mehta, 1981; Bishop jr. 1987; Bromwich, 1990; Ravald & Grönroos, 1996; Woodruff, 1997; Mittal & al., 1999). Thus, there is a close relationship between creating customer values and creating customer satisfaction.

2.2. Customer satisfaction - relationship no. 1

Customer satisfaction is perceived as one of the key drivers of business performance. According to this way of thinking, it is therefore important to understand the drivers of customer satisfaction. Even if this "paradigm of customer satisfaction" is not new, the customer relationship orientation has during the last decade received a lot more attention than earlier. The reasons are many, and can sometimes be linked to the increased attention concerning total quality management and national quality awards (see e.g. Garvin, 1991; Heaphy & Gruska, 1995; Hayes, 1997). Furthermore, the implementation of national customer satisfaction barometers may be yet another reason for the increased attention customer satisfaction has received in more recent years (see e.g. Fornell, 1992; Fornell & al., 1996; Anderson & al., 1994; 1997; Andreassen, 1994; 1998). In addition to analysis of customer

satisfaction and its antecedents, these approaches are also focusing on the effects of customer satisfaction, which is the second relationship of exhibit no. 1.

2.3. Customer loyalty - relationship no. 2

When judging candidates for quality awards such as the Malcolm Baldridge National Quality Award and the European Quality Award one should be aware of the following with respect to customer satisfaction and markets. The customer satisfaction results as well as with activities and programs concerning enhancement of customer satisfaction and customer relationships, and other areas related to customers and markets, count for a considerable part of the amount of points that can be obtained (about 25 percent). This proportion is much the same with respect to other awards such as the Norwegian one. Some of the criteria are related to the consequences of customer satisfaction. The main consequence is by many perceived to be customer loyalty. Thus, the similarity with the national customer satisfaction barometers is striking. The American Customer Satisfaction Index (ACSI) (Fornell & al. 1996) is an interesting example. This model consists of six latent variables (customer expectations, perceived quality, perceived value, overall customer satisfaction, customer complaints and customer loyalty), which are calculated by using fifteen questions or variables. Customer loyalty is in this model looked upon as a proxy for profitability (see e.g. Reichheld & Sasser 1990; Zeithaml & al., 1996; Garbarino & Johnson, 1999; Helgesen, 1999a; 2000).

2.4. Customer profitability - relationship no. 3

In a comprehensive analysis of publications for the period 1921-1987 Capon & al. (1990) identified 320 empirical studies whose principal aim was to find factors or variables that could explain variations in business profitability. Meta-analysis was used for dealing with more than 20 various strategic and environmental variables, that is explanatory variables for variations of business performances. Even if the number of studies treating various quality-aspects of businesses, that is the measurement of the quality of products and services, was considerable, only 20 of these studies seemed to give support to the existence of positive relationships between quality and performance. Nevertheless Capon & al. suggest that:

"High quality products and services enhance performance" (Capon & al., 1990, p. 1157).

However, this finding is in accordance with the results in Shetty (1987) where this topic is studied by using the database called PIMS (Profit Impact of Marketing Strategies). Shetty found that the firms focusing on quality of products and services, also seemed to be the most profitable businesses. Using the same database studies have shown that companies offering superior service achieve higher than normal market share growth (Buzzel & Gale, 1987). This implies that the mechanisms by which service quality influences profits include increased market share and premium prices (Phillips & al., 1983). In addition, businesses in the top quintile with respect to the level of relative service quality on average realise 8 percent higher price than their competitors (Gale, 1992).

However, in the meta-analysis of Capon & al. (1990) customer satisfaction or behavioural effects of customer satisfaction were not utilised as explanatory variables in anyone of these studies. During the 1990th some studies have been carried out, but the number is still rather small and hardly not focusing on relationships between quality and customer profitability (Söderlund & Vilgon, 1999; Helgesen, 2000). Furthermore, most of the studies dealing with relationship no. 3 are mainly based on the firm level or business-unit level data and not on data at the individual customer-level.

2.5. The customer relationship-model

As mentioned previously, analyses of customer satisfaction is of great importance to disclose the antecedents of customer satisfaction that the customers tend to attach the most importance to (see e.g. Hayes, 1997; Best, 1997; Rust & al., 1996; Oliver, 1996). Such an insight can be very useful when deciding the priority of business activities, or in other words how to allocate scarce resources with the main objective to augment customer satisfaction as much as possible. Fornell & Roos (1991) has named such measurements the "second generation" analyses of customer satisfaction. However, such analyses may also be extended to include profitability consequences related to customer satisfaction, which includes all the links of the model of customer relationships, cf. exhibit 1.

Rust & Zahorik (1993) have elaborated a model (a framework) for such an extended analysis of customer satisfaction. In the approach Rust & Zahorik is presenting the mathematical relationships between the concept of customer satisfaction and indicators of business per-

formances at the company level. Based on a market survey for a bank they estimate the coefficients of the concepts related to the various links of the chosen model. This should in theory give the managers important insights that make decisions concerning the allocation of resources to various business activities easier and more correct. Rust & Zahorik presents the study in this way:

This paper describes only a mathematical framework and a pilot study. Considerable additional work is needed to operationalize this approach on a larger scale» (Rust & Zahorik, 1993, op. cit. p. 212).

Hallowell (1996) also tries to estimate the financial consequences for a company (a bank) of a percentage increase in customer satisfaction and reaches much the same conclusions as Rust & Zahorik (1993). However, Hallowell does not include antecedents of customer satisfaction in his analysis and Rust & Zahorik do no consider customer loyalty. Consequently, one may say that in both studies one of the links of the customer orientation model is missing. Studies including all the links of the model seem to not exist. Insights into such more complete relationships may be of great importance for the performances of businesses in future (see e.g. Kaplan & Norton, 1996b; Ittner & Larcker, 1997; Rucci & al., 1998).

3. PROBLEMS AND HYPOTHESES

The focus of this working paper is on the relationships between antecedents of customer satisfaction, customer satisfaction, customer loyalty and customer profitability at the customer level (Helgesen, 1999a; 2000). The starting point is the following research problem: Given the assumption that observations are taken from the same set of respondents, which relationships are found between antecedents of customer satisfaction and customer satisfaction, between customer satisfaction and customer loyalty, and between customer loyalty and customer profitability at the customer level? Analyses related to such a research question can perhaps be called a "third-generation customer satisfaction model". In addition, the study is focusing on quality or quality-aspects of antecedents of customer satisfaction, which is in accordance with the title of this working paper and the theory presented in chapter 2. The chosen approach is step-wise and therefore treating one relationship before going to the next one.

Since the composition of the set of data is cross-sectional only correlation analyses are carried through. This implies that the following hypotheses can be used:

H_1: The higher the perceived quality tends to be for the customer, the higher is his (or her) satisfaction.

H_2: The more satisfied a customer tends to be, the higher is the loyalty of the customer.

H_3: The more loyal a customer tends to be, the higher customer profitability is obtained.

H_4: The more satisfied and loyal a customer tends to be, the higher is the obtained customer profitability.

The first hypothesis may be perceived as self-evident. However, this study is treating various antecedents of customer satisfaction, which is both perceived quality and perceived price as well as various attributes that can be perceived as dimensions (or components) of these concepts. The research question which is addressed is as follows: Which attributes that the supplier offer, that is the antecedents of customer satisfaction, do correlate most with customer satisfaction? This research question may also be formulated in this way: Which of the proposed variables (attributes) do explain most of the variations of customer satisfaction?

If the statistical results indicates that each of the hypotheses no. 2 and no. 3 may be supported, hypothesis no. 4 may be looked upon as an evident consequence. Nevertheless, the fourth hypothesis can also be tested by using figures from the customer-level that are related to different customer segments, cf. part 5.4.

4. RESEARCH DESIGN, RESEARCH METHODS AND MEASUREMENTS

In order to test the formulated hypotheses there is a need for empirical data, and in this study Norwegian exporters of klipfish and frozen fish are chosen as a context. These types of products are based on groundfish as raw material. This part of the Norwegian fishing industry is characterized by almost world-wide export activities in various markets. In each of these product markets a lot of buyers and sellers participate. The products that are offered for sale may be perceived as generic and the trading patterns tend to show seasonal fluctuations. Usually, the importers buy products from several exporters that are often located in different

countries. Repurchases and loyalty often forms a crucial part of the picture of the trade with fish products. However, the customers do have a lot of experience when judging the method of delivery and the quality of the products. Thus, based on the information so far, the part of the Norwegian industry that has been selected as a context for this working paper can be viewed as suitable for the research that is to be undertaken. Nevertheless, it may be asserted that the two groups of products are somewhat different. For example, the products are based on different methods of preservation or technologies. However, the two lines of business have so much in common (groundfish as their raw material, generic products, high level of competition, order-oriented marketing, distribution, etc.) that there should be no doubt that they belong to the same industrial sector.

The empirical data are collected from four Norwegian exporters and their customers. Two of the companies in the sample are exporting klipfish while the other two are exporting frozen fish/filets. Measured in annual revenues, the size of these companies varies from 20 million NOK to about 200 million NOK (1996). Information has been collected by two means[5]:

- Customer accounts (order accounts) and profitability analyses based on accounting information from the four exporting companies.
- Market surveys (measurements of customer satisfaction, etc.) among the customers of the four Norwegian exporters.

In order to estimate customer account profitability (CAP) at the individual customer-level a market-oriented accounting model had to be established (Helgesen 1999a; 1999b).

4.1. Customer profitability accounting

For many industrial enterprises there may be several links in the distribution channels between the firm and the ultimate buyers, that is consumers or end users. This can for example be importers, wholesalers and retailers. Thus, there are various customer markets to take into consideration (Tellefsen, 1995). In this working paper the understanding of the customer

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[5] In order to answer all the research questions in Helgesen (1999a) more data was collected: (1) customer ratings (creditworthiness) including financial statements (furnished by customer rating agencies); (2) The ex-ante perceptions the managers had of the profitability of individual customer accounts and of the creditworthiness of some of the customers.

concept is traditional. Thus, a customer is defined as the direct buyer of the products and/or services from a firm (usually a company).

Establishing reliable profitability figures of customer accounts or "Images of Customer Profitability" (ICPs)[6] is not straightforward, cf. Helgesen (1999b). This procedure is focusing on problems related to the following seven topics (or problem areas): (1) theory basis; (2) cost basis and cost estimation methods; (3) market hierarchy (a market-oriented accounting frame-work); (4) the separation of costs into main groups; (5) the understanding and assignment of costs to cost groups; (6) market-oriented accounting concepts and models; and (7) analytical methods. The choices made for each problem area have practical implications. «Descriptive» ICPs may for instance be established by using different estimation methods: (1) full costing (the absorption method), (2) variable costing (the contribution margin method) or (3) activity based costing (the «hierarchy-method»). These methods will often tend to result in different designs of the specified accounts. However, the most important aspect to remember is that different approaches result in different estimates of customer profitability. Consequently, arguments may be put forward to make use of various methods simultaneously. However, the ABC-approach has advantages compared with the two other methods (Helgesen, 1999a; 1999b). Therefore this approach is chosen.

Exhibit 2 shows the market hierarchy[7] chosen and illustrates the assignment of costs to different levels. It also reflects the chosen market-oriented accounting framework. Costs are assigned to the level where they are incurred (orders, customers, markets, etc.). All the revenues are related to the order level. The costs of the orders are subtracted from the revenues from orders. In this way the results can be estimated for each order. Then revenues and costs resulting from orders are transferred to the customer level. The customer result for a given period is the aggregate revenues from orders related to the actual customer less the aggregate costs related to the orders as well as the costs related to the customer. Then reve-

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[6] «Images of Customer Profitability» (ICPs) may be divided into two main groups; «descriptive» and «causal» ICPs. Causal ICPs, that is images indicating connections between causes and effects, can only be worked out when «descriptive» ICPs are established. Furthermore, there is a need for registrations of potential factors explaining variations of customer profitability so that causal analysis can be carried out.

[7] Accounts are kept on the transaction-level. Consequently, marketing activities may be related to different levels: transaction, order-line, invoice, part order, order, customer, customer category, product market, market segment, market area, distribution channel/value chain, agent area, etc. Thus, profitability images may be elaborated for various objects with respect to the market.

nues and costs from the customers are used on the market level. The market[8] result for a given period is the aggregate revenues from the customers that are related to the actual market less the aggregate customer and the market related costs. Analogously[9] the result of the strategic business unit is estimated. This approach[10] is consistent with the ABC-approach and the Nordic step analysis (Bjørnenak, 1994b).

Exhibit 2. Market hierarchy for order-handling marketing companies.

Costs related to business unit	Business unit	← Cost driver
Market costs	Market	← Cost driver
Customer costs	Customer	← Cost driver
Revenue (price) Order costs	Order	← Cost driver
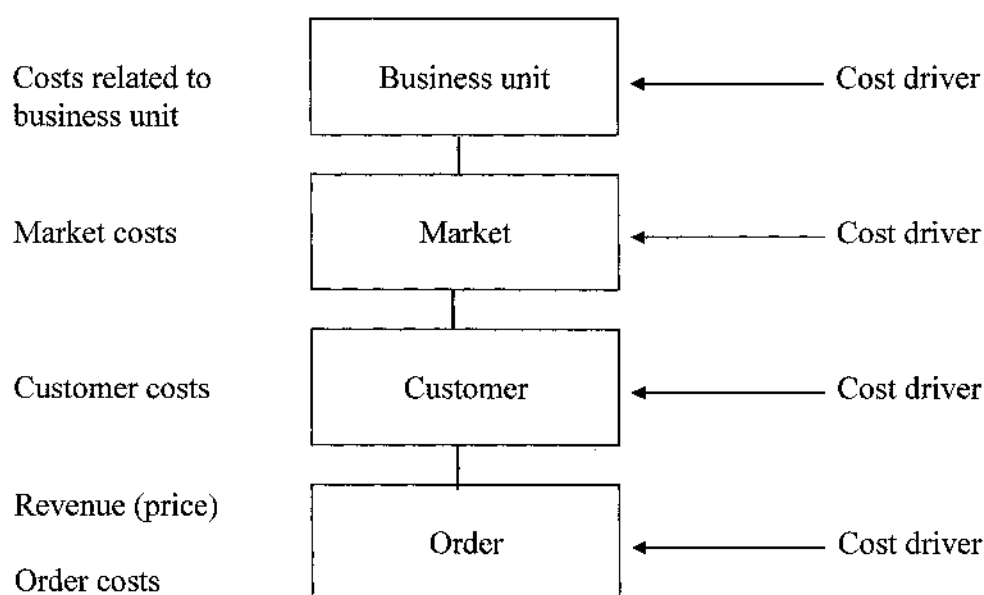
4.2. Customer profitability

During the period of analysis (the financial year of 1996), the total revenue of the four Norwegian exporting companies amounted to 350 million NOK. The sample of orders comprises revenues of about 180 million NOK, which amounts to about 52 percent of their[11] total revenue during the year. The total Norwegian export of klipfish and frozen fish/filets for

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[8] Markets can be categorised and segmented in various ways (Abell, 1980,1993; Shapiro & Bonona, 1984; Kotler, 1992). As long as descriptive ICPs are available the chosen approach makes it possible to estimate the profitability of various market segments based on the assumption that the costs related to the appropriate market segment level are handled according to the ABC-approach.

[9] The outlined methodology makes it possible to establish designs of the specified accounts for each level of the market hierarchy (Helgesen, 1999a; 1999b).

[10] The approach is also consistent with propositions formulated by Kaplan and referred to in Robinson (1990). The principle objective and theme of Kaplan was related to product costs, but he also touched on customer accounts and distribution channels: «Another way to look at operating expenses focuses on customers and distribution channels. We can compute the margins earned by each customer or distribution channel by summing the product-level margins of the products sold to each customer or through each channel and than subtracting expenses incurred for individual customers or channels. We need to find out what causes expenses to vary and at what level of the organization, but expenses need not and should not be allocated below the level at which they are incurred» (Kaplan/Robinson, 1990; op. cit. p. 13).

[11] The sample sizes vary from about 37 percent to 100 percent.

the same period summed up to about 4,5 billion NOK, and the total Norwegian export of fish and fish products reached approximately 22,5 billion NOK (Norwegian Seafood Export Council, 1996). Thus, the lines of business of current interest represent about 20 percent of the total Norwegian exports of fish products. And the sample, consisting of 564 orders related to 176 customer and 36 geographical markets, represents about 4 percent of the total Norwegian exports of products from these lines of business.

None of the four exporting companies had earlier worked out customer accounts or customer profitability analyses in a systematic way. But all of them had well arranged systems of managerial accounting. In two of the companies the intention for some time had been to carry out customer profitability analyses. Thus, some of the necessary information such as the revenues and the easily traceable parts of the costs were recorded. This basic work contributed to facilitate the work. Nevertheless, all the accounts and all the vouchers had to be thoroughly revised. By means of ways of recording this information (data bases and cross tables) all the accounting information was reregistered and assigned to profitability objects according to the chosen procedure. Later on all the accounts were balanced with the ledger. The job was time-consuming, but the insight acquired clearly justified the chosen method of approach. The revenues were assigned to the order-level and the costs were traced and assigned to the various levels of the market hierarchy. In this way about 98,5 percent of the total costs were traced and assigned directly to the cost objects. Thus, only 1,5 percent of the costs (indirect costs) had to be accumulated into cost pools and allocated to the various cost objects according to the[12] ABC-approach. The proportion of direct costs was much higher than expected. The chosen approach was well suited for the use of accounts and profitability analysis for various market objects based on a market-orientation (Helgesen, 1999a; 1999b).

Exhibit 5 presents descriptive statistics for the customer relationship sample. Because of defection for some of the respondents the sample only consists of 67 customers. Relative customer results (customer revenues minus all direct and indirect costs as a proportion of customer revenues) ("KRESIPRO") are used as measures of customer profitability. It appears that the

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[12] Cost drivers representing causalities were used to assign the indirect costs to the objects. In this way the complexities of the transactions (number of products lines per order, number of batches per order, etc.) were taken care of in the correct manner.

average customer is[13] unprofitable, but the level of variation is rather high (for further information see Helgesen, 1999a; 1999b).

The rearrangement of the accounting figures was worked out in close collaboration with the marketers, accountants and managers of the four exporting companies. There was no disagreement concerning the results that were elaborated. The orders included in the sample were selected at random in such a way that several succeeding orders were analyzed in order to simplify the balancing work. However, it should be mentioned that the selected exporting companies are looked upon as being in the vanguard of the industry. And surely, this was one of the reasons for choosing them as working partners. This choice of sample proved to be rather successful. Consequently, it may be questioned whether the sample is representative. The established sample is analyzed at the market level, comparing the market-revenue figures of the four exporters with the total Norwegian export for these lines of business for the period under consideration for each of the 36 geographical markets. The analysis shows a strong and significant correlation (r=0,804; p<0,001). In addition, the 20-25 most important geographical markets for this part of the Norwegian fishing industry are represented in the sample of revenues. Thus, it can be asserted that the sample is not non-representative for the population.

4.3. Customer survey

In order to collect perceptual data to reveal the satisfaction of the customers with the four Norwegian exporters, a questionnaire was distributed to the customers. The questionnaire was examined by experts, both business people and academicians, (face validity), pre-tested, then adjusted somewhat and sent to 244 customer (June 1997). This includes all the customers[14] that had placed orders during the last year. In order to compensate for return postage a small gift (a Norwegian pin) was enclosed. Two reminders[15] were sent in such a way that 30 days passed between each mailing. 128 questionnaires were returned of which

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[13] This does not imply that the customers on the average are unprofitable.

[14] The cover letter and the questionnaire were translated into English, French, German, Italian, Spanish and Portuguese.

[15] Each questionnaire was openly coded so that the reminders only were sent to the non-respondents. But this procedure also made it possible to combine information in such a way that the formulated hypotheses could be tested. In the cover letter the attention of the respondents was directed to the codes which were placed on the last page of the questionnaire. No remarks were made. Furthermore, all the information has been analysed and presented in such a way that the answers are untraceable. Thus, it can be asserted that the questionnaires were not answered anonymously. This coded information from the respondents was necessary in order to match perceptual data with behavioural data for each customer in the sample.

124 were usable[16]. Thus, the response rate was about 51 percent. The respondents were importers from 29 countries. All the main markets that are represented in the survey did to a great extent coinside with the rest of the Norwegian export of fish for the product lines under consideration for the various countries (cf. Norwegian Seafood Export Council, Annual Statistics).

4.4. Customer satisfaction

The customer satisfaction concept may be perceived and measured in different ways (Hausknecht, 1990; Myers, 1991; Fornell, 1992; Ryan & al., 1995; Oliver, 1996). In this study customer satisfaction is measured by using two variables. One of these variables is used to express fulfillment and the other is used as a standard for comparison (Oliver, 1996). For each statement or question in the questionnaire a line with a length of 10 cm was presented, and the respondents were asked to simply put a mark (tick, point, cross) on the line which was placed to the right of the question (see e.g. Hair & al., 1995). The measure of customer satisfaction ("SATIS") was found as the average of the two responses made. By using Cronbachs Alpha the reliability of the concept for the customer relationship sample is estimated to 0,850 which is satisfactory (Carmines & Zeller, 1979; Spector, 1992).

The perceptual variables of the customer survey, for example the statements used to measure customer satisfaction, are all measured on an ordinal level. However, the chosen procedure of measurement with a great number of response alternatives may justify that the analysis is carried out as if the variables are measured on an interval[17] level (see e.g. Asher, 1983; Hair & al., 1995). Thus, customer satisfaction is perceived as a continuous variable according to the common suppositions when doing such an analysis. Exhibit 5 presents descriptive statistics for customer satisfaction for the customer relationship sample. It appears that the average score is 68,9 but the variation is high. This satisfaction-level is common for foods (see e.g. Fierman, 1995; various National Customer Barometers).

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[16] Four of the customers returned the questionnaire but informed that the volume of trade was so little that they were unable to respond.
[17] «It appears that the greater the number of categories in the ordinal variable, the less critical is the interval requirement» (Asher, 1983, op. cit. p. 90).

4.5. Antecedents of customer satisfaction

The customers were also asked to judge their satisfaction with the following eleven antecedents of customer satisfaction: (1) the range of klipfish/saltfish products («FBREDTI»); (2) the answers to inquiries («FFORSOPP»); (3) the information about order progress («FORD-STAT»); (4) the promptness of deliveries («FHURTLEV»); (5) the packing and labeling of goods («FEMBOMRK»); (6) on the whole the quality of the products («FKVAGJSN»); (7) the stability of the product quality («FKVALSTB»); (8) the terms of deliveries («FLEVBET»); (9) the terms of payment («FBETBET»); (10) the competitiveness of prices («FLEVPRIS»); and (11) the paperwork of the exporters («FPAPIRAR»). Furthermore, the customers were asked by comparisons to express their comprised perceptions of the quality («SATKVAL») and the prices («SATPRIS») of the deliveries. When measuring all these variables, the same scale was used. A line with a length of 10 cm was presented, and the respondents were asked to simply put a mark (tick, point, cross) on the scale of that line (which was placed to the right of the question). Exhibit 5 presents descriptive statistics for the antecedents of customer satisfaction for the customer relationship sample and exhibit 3 presents descriptive statistics for the comprised variables[18] ("SATKVAL" and "SATPRIS"). It appears that the average scores vary for the variables and that the variation as to the buyers' perceptions is rather high.

4.6. Customer loyalty

Customer loyalty may be related to various characterisations or phases (Oliver, 1996): (1) cognitive loyalty, (2) affective loyalty, (3) conative loyalty, and (4) action loyalty. Thus, the concept may be perceived and measured in different ways (see e.g. Hirschman, 1970; Reynolds & al., 1974-75; Kau & Ehrenberg, 1984; Hildebrandt, 1988; Ostrowski & al., 1993; Innis & La Londe, 1994; Søderlund & Vilgon, 1995; Mägi, 1999). Often loyalty is equated with future behavioural intentions. However, I agree with Olivia & al. (1992, p. 85) when they argue that «an intention is only a tentative measure of behavioural loyalty». Consequently, I measure customer loyalty as the share of the total purchases a customer buys from a particular supplier (given a particular product and a given particular period of time) (see e.g. Peppers & Rogers, 1995; Pine II & al., 1995).

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[18] The "customer relationship sample" comprises all the respondents where information on all the levels is available. It appears that the sample size varies a little, between 67 respondents in most of the analyses and 65 respondents in the rest of the analyses. This discrepancy is caused by the fact that two of the respondents of the customer relationship sample have not been answering the questions concerning the measurement of the variables "SATKVAL" and "SATPRIS".

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In the survey the customers were questioned about their total purchases in the line of business under consideration, that is both with respect to the total value ("INNKJVER") and the total number of orders. The total sales of the exporters to each of the customers were found in the ledger of accounts for the debtors, that is the total value ("KITOT") and the total number of orders. Customer loyalty is then estimated as the proportion of the value of purchases ("KUNDAND"), that is as "KITOT"/"INNKJVER". Exhibit 5 presents descriptive statistics for customer loyalty (customer shares) for the customer relationship sample. It appears that the average proportion is 13,8 but the variation is high. In addition, another variable, "ANDINNKJ", was established to reflect the number of orders placed with the exporter. This was estimated as the proportion of the total number of orders with respect to this line of business. This analyses is based on 53 respondents. The Pearsons correlation coefficient between "KUNDAND" and "ANDINNKJ" is strongly positive[19] and significant ($r=0,562$; $p<0,001$) which provides solid support to the estimates of the shares of the customers.

4.7. Some further comments about the relationship sample

Exhibit 5 present descriptive statistics for the relationship sample consisting of 67 customers, that is the customers where all the information is available. Each existing sub-sample had a little higher number of answers than the relationship sample (profitability sample, $n=176$; satisfaction sample, $n=116$; loyalty sample, $n=94$). Comparing the relationship sample with each of the existing rest samples by way of t-tests does not reveal any significant differences ($p<0,05$). Thus, it may at least be asserted that the relationship sample is not non-representative of the total sample of the study.

The formulated hypotheses are tested with both correlation and regression analyses (OLS). Exhibit 5 indicates that the variables under consideration are not normally distributed. In order to comply with the methodical requirements, the variables are transformed before analyses are carried out, cf. the presentation below. Such transformations result in non-linear relationships between the original variables. As a starting point one has to take into consideration that such relationships are the results of the transformations and not consequences of suppositions that the relationships between the variables are non-linear.

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[19] The customers were also asked about the number of suppliers used ("ANTLEV"). Out of the relationship sample of 67 respondents 63 answered this question. The Pearsons correlation coefficient between "KUNDAND" and "ANTLEV" is negative ($r=-0,159$) but not statistically significant ($p<0,05$).

It appears from the discussion above that the measures of customer profitability are based on accounting information from the fiscal year of 1996. The customer survey was carried out in mid-1997. Thus, the respondents amongst other things could take into consideration their experiences with the 1996-deliveries, which is a procedure supported by theory. Still according to theory, the supposition is that increased customer satisfaction does result in increased loyalty. However, the chosen measure of customer loyalty (customer shares) is estimated by using accounting information from the fiscal year of 1996. Consequently, the time sequence may be questioned. Similarly, relative customer results are based on 1996-figures and this may also be questioned. However, the observations may be perceived as being related to the same orders or transactions. Therefore, I take it for granted that the data can be interpreted as cross sectional and may be studied by way of correlation analyses between the variables of the models under scrutiny. However, I do emphasize that ideally all the analyses in this working paper should have been based on time series.

5. FINDINGS

Exhibit 1 shows the supposed links between the main customer relationship concepts. In this section the findings are presented, this implies that the formulated hypotheses (section 3) are tested and discussed. According to the chosen step-wise approach, the sequence of the discussion of the relationships is as follows: (1) antecedents of customer satisfaction and customer satisfaction; (2) customer satisfaction and customer loyalty; (3) customer loyalty and customer profitability; and finally (4) the relationships for four customer segments based on a classification according to customer satisfaction/customer loyalty.

5.1. Relationships between antecedents of customer satisfaction and customer satisfaction

The comprised satisfaction expressed by customers may be perceived as being related to a set of elements or antecedents that can be categorized and put together in various ways. Futhermore, it is difficult and often not advantageous to include every possible element in such models. Consequently, only some of the variation in customer satisfaction is likely to be explained. In this working paper two analyses are presented and used in an attempt to explain the variations of customer satisfaction. First, two variables are used, that is "SATKVAL" and

"SATPRIS". Secondly, all the eleven variables or antecedents of customer satisfaction of the customer survey are offered as explanatory variables of variations in customer satisfaction.

5.1.1. Two antecedents of customer satisfaction

The comprised satisfaction as expressed by the customers can be perceived as originating from two comprised antecedents of customer satisfaction, one expressing elements of quality or "quality-components" and the other expressing elements of prices or "price-components". As mentioned in the beginning this understanding forms the starting point of the analyses. Among other things, the aim is to get a first insight with respect to the relationships between the antecedents of customer satisfaction and customer satisfaction.

The variable "SATKVAL" is perceived as capturing "quality-components" and the variable "SATPRIS" analogously "price-components", cf. the discussion below. The correlation between the variables is slightly positive but not statistically significant ($r=0,115$; $p<0,361$). The level of correlation and the level of significance indicates that the two variables do capture different components of the antecedents of customer satisfaction. For instance, the variable "SATKVAL" correlate positively and statistically significant with the following variables (or antecedents of customer satisfaction): «FKVAGJSN» ($r=0,832$; $p<0,001$) and «FKVALSTB» ($r=0,831$; $p<0,001$). On the other hand, the variable «SATPRIS» have a higher correlation with variables like "FLEVPRIS» ($r=0,405$; $p<0,001$), «FLEVBET» ($r=0,349$; $p<0,004$) and «FBREDTI» ($r=0,434$; $p<0,001$). This indicates that the variable «SATKVAL» can be perceived as the respondents comprised judgments of quality, while the variable «SATPRIS» seems to be more complex, but do primarily uncover components or aspects related to prices. This is also confirmed by a factor analysis and a succeeding correlation analysis. In the factor analysis (principal component analysis with varimax rotation) four components are extracted from the eleven antecedents of customer satisfaction, two which may be perceived as representing quality aspects and the other two representing price aspects. The degree of correlation and the significance levels between these new variables and "SATKVAL" and "SATPRIS" are in accordance with the findings at the individual variable level.

Exhibit 3 presents descriptive statistics for the variables «SATIS», «SATKVAL» og «SATPRIS» for the respondents belonging to the customer relationship sample.

Exhibit 3. Descriptive statistics for the variables «SATIS», «SATKVAL» and «SATPRIS» (N=65).

Variable names and concepts	Arithmetic mean	Standard deviation	10. percentile	90. percentile
«SATIS» (Customer satisfaction)	70,1	20,1	40,7	93,2
«SATKVAL» (Quality "components")	71,3	21,1	47,6	93,4
«SATPRIS» (Price "components")	63,9	22,6	42,0	91,4

Analysis shows that the linear correlation coefficients between "SATIS" and the other two variables under consideration are as follows: «SATKVAL» ($r=0,623$; $p<0,001$) and «SATPRIS» ($r=0,167$; $p<0,1$). This indicates that "SATIS" seems to be more closely connected with "SATKVAL" than with "SATPRIS". However, as pointed out in section 3, the analyses are based on transformations of the dependent variables. Therefore the variable "ASATIS", which is "SATIS" squared, is used in the following analysis. The linear correlation coefficient (Pearsons) between "ASATIS" and "SATKVAL» is $0,630$ ($p<0,001$) and between «ASATIS» and «SATPRIS» $0,233$ ($p<0,05$).

The relationships between the variables under consideration may be analysed by using multiple regression analysis (OLS) where both the independent variables are used simultaneously as explanatory variables for variations in customer satisfaction, that is:

(2) $ASATIS = b_0 + b_1 SATKVAL + b_2 SATPRIS + u$

Exhibit 4 presents the estimates of the regression coefficients as well as the standardised regression coefficients (beta). In addition, the t-values are shown. Other main statistics are; $R=0,650$, $R^2=0,423$, R^2adjusted$= 0,404$ and $F=22,68$ ($p<0,001$). According to these results[20], variations in the two comprised antecedents of customer satisfaction can explain about 40 percent of the variations of customer satisfaction. To explain the remaining part of the variations one has to search for other explanatory variables. The model as a whole is significant at the $0,001$-level, which is another way of saying that the equation as a whole is significant. However, the estimated regression coefficient for the variable "SATPRIS" is only

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[20] Residual analysis provides satisfactory results. Kolmogorov-Smirnov $Z=0,081$ is indicating normality with at least a probability of $0,20$.

statistical significant at the 0,1-level which may be viewed as unsatisfactory. Why such a result is found is better understood at the end of this section of the working paper (cf. chapter 5.4.)

Exhibit 4. Estimates of regression coefficients of the two "comprised" antecedents of customer satisfaction (N=65).

	Arithmetic mean	Standard- error	Std. coeff. beta	t
Constant	-1098,73	1053,12		-1,043
SATKVAL	73,516	11,690	0,611	6,289[a]
SATPRIS	18,284	10,935	0,162	1,672[b]

[a] $p<0,001$
[b] $p<0,01$

Expressed in the original variable for customer satisfaction ("SATIS") this result may be presented in this way:

(3) $E[SATIS] = (-1098,73 + 73,516 \, SATKVAL + 18,284 \, SATPRIS)^{1/2}$

The constant term of relation (3) is negative. Isolated this implies that the values of satisfaction for each of the two antecedents of customer satisfaction, that is satisfaction with "quality-components" and "price-components", have to be on a certain level in order to conclude that the relationship is "defined". Furthermore, the correlation between the variables appears to have such a shape that customer satisfaction is increasing both with increasing "satisfaction of quality" and increasing "satisfaction of price". However, for both of these variables the degree of correlation is degressive[21] (the relationship is weakening gradually). Moreover, the results imply that the degree of correlation between "satisfaction of quality" and customer satisfaction is stronger than the correlation between "satisfaction of price" and customer satisfaction for similar increases in the two antecedents of customer satisfaction.

The variables "SATKVAL" and "SATPRIS" can be perceived as comprised or aggregated variables representing various elements of the suppliers' offer. This may be analyzed further by using more detailed information from the customer survey, that is all the eleven antecedents of customer satisfaction.

5.1.2. Eleven antecedents of customer satisfaction

The customer relationship sample consists of 67 respondents. Exhibit 5 shows descriptive statistics for the variables that are incorporated in the analyses.

Exhibit 5. Descriptive statistics for the eleven antecedents of customer satisfaction, customer satisfaction, customer loyalty and customer profitability (N=67).

Variable names	Arithmetic mean	Standard deviation	10. percentile	90. percentile
FBREDTI	60,5	25,6	15,0	93,0
FFORSOPP	63,3	30,4	13,0	93,0
FORDSTAT	62,9	27,6	13,8	92,2
FHURTLEV	73,3	21,1	46,0	93,0
FEMBOMRK	75,3	24,8	48,4	94,0
FKVAGJSN	77,2	23,3	48,8	95,2
FKVALSTB	76,2	23,7	48,0	94,4
FLEVBET	81,8	16,5	58,0	94,2
FBETBET	75,9	24,9	39,0	94,2
FLEVPRIS	62,5	27,6	11,6	93,2
FPAPIRAR	76,6	19,4	50,8	94,2
SATIS	68,9	20,8	36,5	93,1
KUNDAND	13,8	25,0	0,1	58,4
KRESIPRO	-1,9	9,9	-9,6	4,5

Analogously with the analysis above (chapter 5.1.1.) the aim is to reveal the relationships between the antecedents of customer satisfaction and customer satisfaction. The analysis is based on the following regression equation:

$$(4)\ ASATIS = b_0 + b_1 FBREDTI + b_2 FFORSOPP + b_3 FORDSTAT + b_4 FHURTLEV + b_5 FEMBOMRK + b_6 FKVAGJSN + b_7 FKVALSTB + b_8 FLEVBET + b_9 FBETBET + b_{10} FLEVPRIS + b_{11} FPAPIRAR + u$$

In order to find which of the chosen antecedents of customer satisfaction which have the strongest relationship with customer satisfaction, a stepwise multiple regression analysis is carried out. Exhibit 6 shows the correlation coefficients and significance levels between the 11 antecedents of customer satisfaction and customer satisfaction (the transformed variable), that is the variables that are included in equation (4).

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[21] This can also be seen by calculating the partial derivatives for the relationship. However, I do emphasize that the transformation of the variable "SATIS" has been carried out in order to comply with the methodological requirements. Such transformations imply that the correlation between the original variables becomes non-linear.

Exhibit 6. Correlation coefficients and significance levels between the 11 antecedents of customer satisfaction and customer satisfaction (the transformed variable) (N=67).

Variable names	F-BREDTI	FFORS-OPP	FORD-STAT	FHURT-LEV	FEM-BOMRK	FKVA-GJSN
FBREDTI	-					
FFORSOPP	0,274 (0,012)	-				
FORDSTAT	0,302 (0,007)	0,582 (0,001)	-			
FHURTLEV	0,043 (0,365)	0,300 (0,007)	0,360 (0,001)	-		
FEMBOMRK	0,083 (0,251)	-0,157 (0,102)	0,009 (0,472)	0,114 (0,180)	-	
FKVAGJSN	0,418 (0,001)	-0,034 (0,391)	0,104 (0,202)	0,012 (0,462)	0,253 (0,019)	-
FKVALSTB	0,348 (0,002)	-0,035 (0,389)	0,119 (0,169)	-0,024 (0,425)	0,217 (0,039)	0,955 (0,001)
FLEVBET	0,245 (0,023)	0,179 (0,073)	0,382 (0,001)	0,294 (0,008)	0,321 (0,004)	0,259 (0,017)
FBETBET	0,477 (0,001)	0,108 (0,192)	0,336 (0,003)	0,080 (0,261)	0,368 (0,001)	0,332 (0,003)
FLEVPRIS	0,497 (0,001)	0,453 (0,001)	0,421 (0,001)	-0,079 (0,263)	0,040 (0,373)	0,372 (0,001)
FPAPIRAR	0,002 (0,494)	0,292 (0,008)	0,563 (0,001)	0,187 (0,065)	0,294 (0,008)	0,089 (0,236)
ASATIS	0,311 (0,005)	0,569 (0,001)	0,493 (0,001)	0,393 (0,001)	0,110 (0,187)	0,526 (0,001)

Variable names	FKVAL-STB	FLEVBET	FBETBET	FLEVPRIS	FPAPI-RAR	ASATIS
FKVALSTB	-					
FLEVBET	0,269 (0,014)	-				
FBETBET	0,326 (0,004)	0,536 (0,001)	-			
FLEVPRIS	0,391 (0,001)	0,330 (0,003)	0,578 (0,001)	-		
FPAPIRAR	0,118 (0,172)	0,530 (0,001)	0,256 (0,018)	0,255 (0,019)	-	
ASATIS	0,500 (0,001)	0,390 (0,001)	0,201 (0,052)	0,383 (0,001)	0,328 (0,003)	-

The model results are shown in exhibit 7. It is seen that the analysis is stopped after three iterations and that the model is statistically significant at the 0,001-level.

Exhibit 7. Model results[22] for the stepwise multiple regression analysis for the customer relationship sample (N=67).

Modell	R	R^2	R^2adj.	F-value	Sig. F-change.	Sig. F
1.	0,569	0,324	0,314	31,166	0,001	0,001
2.	0,789	0,623	0,611	52,773	0,001	0,001
3.	0,819	0,671	0,655	42,800	0,003	0,001

Exhibit 8 shows which of the antecedents of customer satisfaction which are included for each step of the analysis and presents estimates of the regression coefficients as well as the standardised regression coefficients (beta) and the t-values. Three antecedents of customer satisfaction are included in the final analysis. These three variables can explain about 2/3 of the variation in customer satisfaction.

Exhibit 8. Stepwise regression analysis for all the chosen antecedents of customer satisfaction - variables which are incorporated on each step and estimates of the coefficients, etc. (N=67).

Model		Arithmetic mean	Standard-error	Std. coeff. beta	t
1.	Constant	2070,451	614,934		3,367[a]
	FFORSOPP	48,950	8,768	0,569	5,583[a]
2.	Constant	-2760,493	822,020		-3,358[a]
	FFORSOPP	50,565	6,607	0,588	7,653[a]
	FKVAGJSN	61,257	8,612	0,547	7,113[a]
3.	Constant	-4430,276	948,699		-4,670[a]
	FFORSOPP	44,601	6,521	0,519	6,840[a]
	FKVAGJSN	60,687	8,107	0,542	7,485[a]
	FHURTLEV	28,533	9,382	0,231	3,041[b]

[a] $p<0,001$
[b] $p<0,01$

Exhibit 8 shows that the first antecedent of customer satisfaction that is included in the analysis is «FFORSOPP», that is the satisfaction of the customer with respect to the way the supplier does answer to the inquiries. This variable is kept in all of the three models. In model no. 2 «FKVAGJSN» is included, that is satisfaction of the customers with "the quality of the products as a whole". This variable is also kept in the succeeding model. Then (model

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[22] Analyses of residuals and indicators related to multicollinearity (tolerance and VIF) show satisfactory results. The decision rules for the analysis is F-value<0,05 for inclusion and F-value>0,1 for exclusions of variables.

no. 3) the variable «FHURTLEV», that is "the promptness of deliveries", is included in the regression model. The rest of the proposed antecedents of customer satisfaction is not included as statistically significant at the 0,05-level. It appears (exhibit 8) that the estimates of coefficients for all of the included variables are statistically significant at the 0,01-level.

Exhibit 8 shows that the variable «FKVAGJSN» has the strongest degree of positive correlation with customer satisfaction. Then follows «FFORSOPP» and finally «FHURTLEV». None of these variables are related to "price components", but rather to "quality components". The first variable is obviously the customers perceived and expressed quality of the products delivered. And the next two variables may be perceived as representing various aspects of service quality. Consequently, it may be asserted that quality seems to have a lot more to say for the satisfaction of customers than prices or price-components seem to have.

5.1.3. Quality and customer satisfaction – some final comments

The results above are in accordance with the findings in Helgesen (1999a) where the whole customer sample (N=108) is analyzed analogously. However, it should be added that in those analyses the statistical results (the composition of the variables) are somewhat different. Both the variables "FKVAGJSN" and "FFORSOPP" are included in the final regression model and are both found to have a strong and statistically significant correlation with customer satisfaction ("ASATIS"). Besides, the size of the estimate of the regression coefficient of the variable "FKVALGJSN" compared with the other variables included in the final solution is at approximately the same level as revealed above. However, the variable "FHURTLEV" is not included in the final model. Instead the following two variables are included: "FPAPIRAR" (the paperwork for the exporters) and "FORDSTAT" (the information the exporters have about the progress of orders). But still none of the antecedents can be said to belong to the "price-components". Furthermore, these findings were supported by a factor analysis (principal component analysis with varimax rotation) where four components were extracted. By offering the four new variables as explanatory variables for variations in customer satisfaction, only two of them were taken into consideration, and none of those may be perceived as being related to the price (Helgesen, 1999a).

The results of this working paper both with respect to the analysis of two antecedents of customer satisfaction (chapter 5.1.1.) as well as the analysis of eleven antecedents of customer

satisfaction (chapter 5.1.2.) provides support for the first of the formulated hypotheses of section 3, that is "the higher the perceived quality for the customers tends to be, the higher is the satisfaction for the customer" (H_1). Furthermore, attributes related to product and service quality are explaining most of the variations for customer satisfaction.

These results are not exceptional and are in accordance with many other studies within this field of business research (see e.g. Fornell, 1992; Anderson & Sullivan, 1993; Selnes, 1993; Anderson & al., 1994; Oliver, 1996; Smith, 1998). However, the most interesting result is perhaps the weak degree of correlation between "price-antecedents" of customer satisfaction and customer satisfaction. This is analysed further in the final part of this section of the working paper (chapter 5.4.).

5.2. The relationship between customer satisfaction and customer loyalty

Referring to the customer relationship model (cf. exhibit 1) the second link represents the relationship between customer satisfaction and customer loyalty, which is going to be analysed in this part of the working paper. The hypothesis that is going to be tested is: "The more satisfied a customer tends to be, the higher is the loyalty of the customer" (H_2).

Exhibit 5 shows descriptive statistics for the variables that are incorporated in the analyses of this part of the working paper. The size of the Pearson's correlation coefficient between the variables "SATIS" and "KUNDAND" ($r=0,197$; $p=0,055$; $N=67$) seems to indicate that there is a positive relationship between customer satisfaction and customer loyalty at the customer level. As earlier pointed out, the variables are non-normal. Therefore further analyses are carried out on transformed variables.

The distributions of the variables under consideration show that the variable "SATIS" is negatively skewed and the variable "KUNDAND" is positively skewed, cf. exhibit 5. By establishing two new variables, "ASATIS", which is "SATIS" squared, and "AKUNDAND" which is a ln-transformation of "KUNDAND", the key methodical requirements are met.

The relationship between customer satisfaction ("ASATIS") and customer loyalty ("AKUNDAND") can be analyzed by using a simple regression model (OLS) where vari-

ations in customer satisfaction is supposed to explain at least some part of the variations in customer loyalty. That relationship can be expressed as follows:

(5) AKUNDAND = b_o + b_1ASATIS + u

Exhibit 9 presents the estimates of the regression coefficients including the standardised regression coefficient (beta) which for bivariate regression is equal to the linear coefficient of correlation. In addition, the t-values are shown. Other main statistics[23] are; R=0,327, R^2=0,107, R^2adjusted= 0,093, standard error of the estimate = 2,13 and F=7,80 (p<0,007). According to these results, variations in customer satisfaction can explain about 10 % of the variations of customer loyalty. To explain the remaining part of the variations one has to search for other explanatory variables. The model as a whole is significant at the 0,01-level, which is another way of saying that the equation as a whole is significant.

Exhibit 9. Customer satisfaction ("ASATIS") and customer loyalty ("AKUNDAND") at the customer level - estimates of regression coefficients, etc. (N=67).

	Arithmetic mean	Standard-error	Std. coeff. beta	t
Constant	-0,641	0,581		-1,103
ASATIS	0,00028	0,001	0,327	2,792[a]

[a] p<0,01

However, because of the transformations of the variables, the shape of the relationship between the original variables ("SATIS" and "KUNDAND") is not easy to see. Based on the estimates above this relationship is therefore presented in exhibit 10.

The correlation between the variables "SATIS" and "KUNDAND" seems to be positive, but declining. Thus, it seems that the more satisfied a customer is, the more loyal he is. However, the degree of correlation is degressive (the relationship is weakening gradually). The results do not surprisingly support the formulated hypothesis (section 3). It seems that this hypothesis may be accepted, which lends support to the statement that "the more satisfied a customer tends to be, the higher is the loyalty of the customer" (H_2).
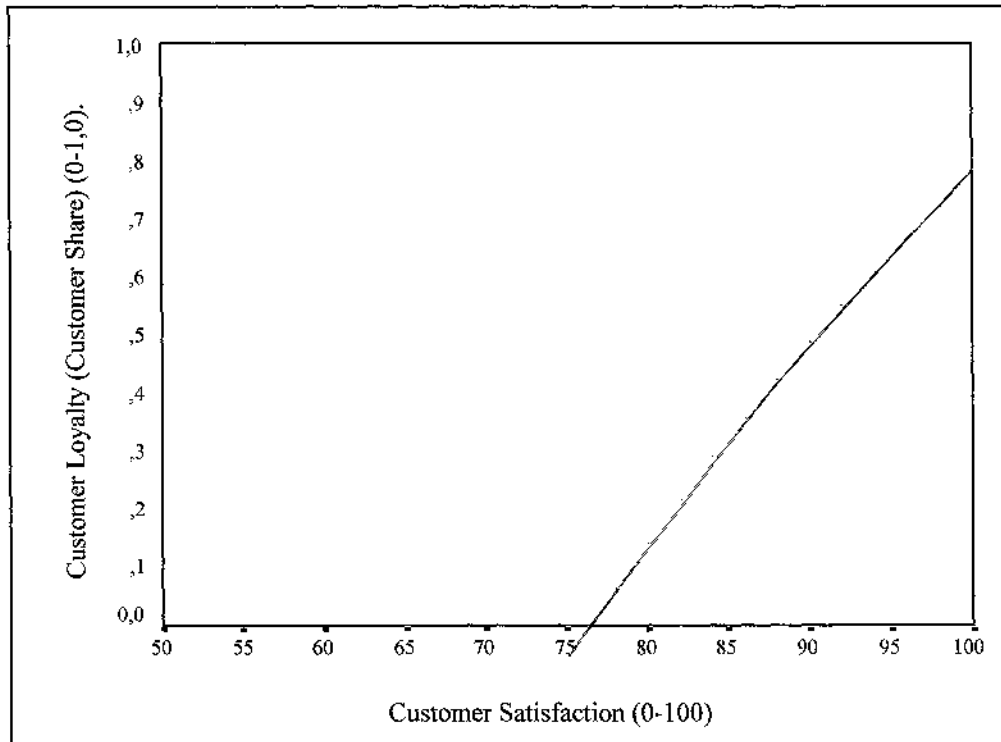
Exhibit 10. Customer satisfaction and customer loyalty at the customer level (N=67).

The relationship[24] between the variables "SATIS" and "KUNDAND" may be interpreted as if the satisfaction level has to pass a certain threshold if it is going to have any influence on customer loyalty. This finding[25] is in accordance with earlier studies (see e.g. Ittner & Larcker, 1997; Oliver, 1996; Paltschik & Storbacka, 1992). Furthermore it seems like the relationship is degressive, which means that increased customer satisfaction beyond the "zero-point" has a diminishing effect on increased customer loyalty. This result is also in accordance with earlier studies and theoretical reflections (see e.g. Ittner & Larcker, 1997; Storbacka, 1995). However, the achievement of customer satisfaction is not normally assumed to be without costs. Thus, the findings do suggest that an optimal level of customer satisfaction may be calculated. This is based on the assumption that customer loyalty shows a positive correlation with customer profitability, and furthermore the assumption that estimates can be made both of customer revenues (prices) and customer costs as effects of increased customer satisfaction.

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[23] The analysis of the residuals also provides satisfactory results. Kolmogorov-Smirnov Z=0,079 is indicating normality with at least a probability of 0,20.

[24] The formulations are based on the assumption that a cause- and effect relationship really exists between the two variables.

5.3. The relationship between customer loyalty and customer profitability

In the customer relationship model (cf. exhibit 1) the third link represents the relationship between customer loyalty and customer profitability, which is going to be analysed in this part of the working paper. The hypothesis that is going to be tested is: "The more loyal a customer tends to be, the higher customer profitability tends to be" (H_3).

Exhibit 5 shows descriptive statistics for the variables that are incorporated in the analyses in this part of the working paper. The size of the Pearson's correlation coefficient between the variables "KUNDAND" and "KRESIPRO" ($r=0,226$; $p<0,033$; $N=67$) seems to indicate that there is a positive relationship between customer loyalty and customer profitability at the customer level. This provides support for H_3, cf. section 3.

Exhibit 11. Customer loyalty («AKUNDAND») and customer profitability («KRESIPRO») at the customer level - estimates of regression coefficients, etc. (N=67).

	Arithmetic mean	Standard-error	Std. coeff. beta	t
Constant	-3,041	1,226		-2,480[b]
AKUNDAND	1,382	0,519	0,314	2,663[a]

[a] $p<0,01$
[b] $p<0,05$

Analogously to the presentation above, the relationship between customer loyalty ("AKUND-AND") and customer profitability[26] ("KRESIPRO") may be analyzed by using a simple regression model (OLS) where variations in customer loyalty is supposed to explain at least a part of the variations in customer profitability (relative customer results). That relationship can be expressed as follows:

(6) $KRESIPRO = b_0 + b_1 AKUNDAND + u$

Exhibit 11 presents the estimates of the regression coefficients and the t-values. Other main statistics are; $R=0,314$, $R^2=0,098$, R^2adjusted$=0,084$, standard error of the estimate = 9,43 and

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[25] This threshold seems to be at a level or value of customer satisfaction of about 75. This coincides with earlier findings. The fact that the relationship seems to have such a shape is of great interest.

[26] The variable "KRESIPRO" is non-normal, but the departure from non-normality is not of such a character that analyses should not be recommended. It is almost impossible to find data that are exactly normally distributed. For most statistical tests, it is sufficient that the data are approximately normally distributed. Thus, for large data sets, one should look not only at the observed significance level but also at the actual departure from normality (SPSS, 1993; p. 191). The major problem here is kurtosis, that is a rather peaked distribution. "For practical purposes, symmetry (with no severe outliers) may be sufficient. Transformation are not a magic wand, however. Many distributions cannot even be made symmetrical" (Hamilton, 1992; p. 23).

F=7,09 (p<0,01). According to these results, variations in customer loyalty explain about 10 percent of the variations of customer profitability. To explain the remaining part of the variations one has to search for other explanatory variables. The model is significant at the 0,01-level.

Because of the transformation of the variable "KUNDAND", the shape of the relationship between the original variables ("KUNDAND" and "KRESIPRO") is not easily seen. Based on the estimates above this relationship is presented in exhibit 12.

The correlation between the variables "KUNDAND" and "KRESIPRO" seems to be positive, but declining. Thus, it seems to be the case that the more loyal a customer is, the more profitable he is, but as pointed out earlier the degree of correlation is declining. This result provides support for the formulated hypothesis (section 3). It seems that this hypothesis may be accepted, which implies that "the more loyal a customer tends to be, the higher customer profitability is obtained" (H₃). The increase in customer profitability is measured as an increase in the relative customer results, which obviously implies that the increase in absolute figures is positive.

The relationship[27] between the variables "KUNDAND" and "KRESIPRO" seems to be degressive. This indicates that increased customer loyalty has a positive effect on customer profitability, but at a decreasing rate. Several arguments can be used to explain such a relationship between these variables (see e.g. Anderson & al., 1994; Paltschik & Storbacka, 1992; Fornell, 1992; Rust & Zahorik, 1993; Johanson & Mattsson, 1994; Kalwani & Narayandas, 1995; Ittner & Larcker, 1997; Helgesen 1999a). According to the estimates, customer loyalty has to be above a certain level in order to influence customer profitability. The critical level seems to be a customer share[28] of about 10 percent.

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[27] I emphasize that the formulations below are based on the assumption that a cause- and effect relationship may be supposed to exist between the two variables.

[28] It is not the figure itself which is of most interest, but rather the fact that the relationship seems to have such a shape.
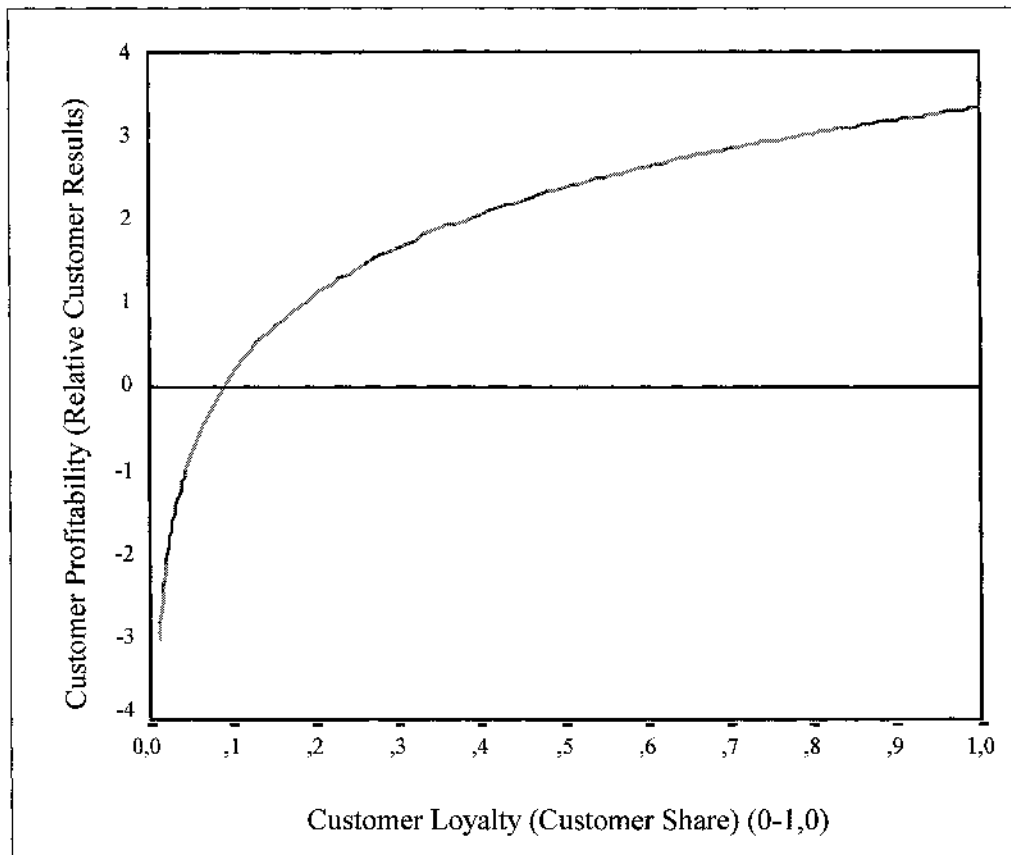
Exhibit 12. Customer loyalty and customer profitability at the customer level (N=67).

5.4. Four customer segments classified according to customer satisfaction/customer loyalty

The results above provide support for the fourth hypothesis in section 3, that is "the more satisfied and loyal a customer tends to be, the higher is the obtained customer profitability" (H_4). This result may be analysed further by dividing the sample of customers into customer segments according to various degrees of customer satisfaction and customer loyalty.

When dividing the sample of customer relationships[29] into customer segments the medians of measured customer satisfaction ("SATIS") and measured customer loyalty ("KUNDAND") are used. This may be represented as a "satisfaction-/loyalty"-matrix, cf. exhibit 13. The median for the variable «SATIS» has the value of 71,5 and for the variable «KUNDAND» 2,3 percent, which result in the following distribution on the four groups: (1) 11 customers are less satisfied but more loyal than the average, (2) 22 customers are less satisfied and also less loyal than the average (3) 10 customers are more satisfied but less loyal than the average, and (4) 22 customers are more satisfied and also more loyal than the average. In the following

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analyses it is referred to the numbering of the groups in accordance with exhibit 13. Thus, the number of the customer segment is used as the model no. (number).

		Customer loyalty	
		Above the median	Below the median
Customer Satisfaction	Above the median	4	3
	Below the median	1	2

Exhibit 13. "Customer satisfaction/customer loyalty"-matrix.

Exhibit 14 shows descriptive statistics for each of the four customer segments and for the whole sample. First, the following research question is addressed: Is there disparities between the various customer segments concerning their emphasis of antecedents of customer satisfaction? That is, do the satisfied and loyal customers have other priorities concerning the antecedents that the other customer groups? Then, the attention is attracted to the opposite direction: Is there disparities of profitability between the various customer segments? Because of the number of respondents of each of the groups, only two antecedents of customer satisfaction are used, that is "SATKVAL" and "SATPRIS", cf. chapter 5.1.

5.4.1. Customer segments – relationships between antecedents of customer satisfaction and customer satisfaction

For each of the customer segments the relationships between the chosen antecedents of customer satisfaction and satisfaction is analysed by way of stepwise[30] multiple regression analyses (OLS). Analogously with the analyses above (chapter 5.1.1.) the aim is to reveal the relationships between the antecedents of customer satisfaction and customer satisfaction. The analysis is based on the following regression equation:

$$(7.)\ ASATIS = b_0 + b_1 SATKVAL + b_2 SATPRIS + u$$

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[29] Because of defections the sample is reduced to 65 respondents, cf. chapter 5.1.

[30] Considering the number of respondents of each of the customer groups this approach may be questioned. However, owing to the fact that compulsory regression analyses produce analogous results, a stepwise approach is chosen because of pure appropriateness (space-saving, clarity, etc.).

Exhibit 14. Customer segments – descriptive statistics for four customer groups

Customer groups/variables :	No. of cstm.	Arithm. mean	Std. dev.	10. perc.	90. perc.
(1) Less than median satisfied, but more than median loyal – model no. 1:					
«SATKVAL» ("quality components")	11	62,7	25,0	15,0	94,4
«SATPRIS» ("price components")	11	56,3	20,6	18,0	83,6
«SATIS» ("customer satisfaction")	11	61,9	11,7	37,4	71,5
«KUNDAND» ("customer loyalty")	11	25,6	31,0	2,8	91,1
«KRESIPRO» ("relative customer res.")	11	-2,7	6,6	-16,2	5,5
(2) Less than median satisfied and less than median loyal – model no. 2:					
«SATKVAL» ("quality components")	22	59,9	17,2	43,0	84,1
«SATPRIS» ("price components")	22	60,9	15,3	42,0	85,6
«SATIS» ("customer satisfaction")	22	51,0	16,5	23,5	67,9
«KUNDAND» ("customer loyalty")	22	0,7	0,6	0,1	1,8
«KRESIPRO» ("relative customer res.")	22	-5,9	15,1	-32,6	4,1
(3) More than median satisfied, but less than median loyal – model no. 3:					
«SATKVAL» ("quality components")	10	81,1	8,0	71,0	94,6
«SATPRIS» ("price components")	10	69,1	15,8	48,0	90,4
«SATIS» ("customer satisfaction")	10	83,5	9,7	72,0	96,0
«KUNDAND» ("customer loyalty")	10	0,9	0,8	0,1	1,9
«KRESIPRO» ("relative customer res.")	10	-4,4	8,8	-24,5	2,6
(4) More than median satisfied and more than median loyal – model no. 4:					
«SATKVAL» ("quality components")	22	82,7	19,5	54,2	96,7
«SATPRIS» ("price components")	22	68,5	30,6	12,6	94,4
«SATIS» ("customer satisfaction")	22	87,3	6,0	78,2	94,0
«KUNDAND» ("customer loyalty")	22	26,7	31,5	2,4	83,5
«KRESIPRO» ("relative customer res.")	22	1,9	6,1	-6,0	5,6
The whole sample:					
«SATKVAL» ("quality components")	65	71,3	21,1	47,6	93,4
«SATPRIS» ("price components")	65	63,9	22,6	42,0	91,4
«SATIS» ("customer satisfaction")	65	70,1	20,1	40,7	93,2
«KUNDAND» ("customer loyalty")	65	13,7	25,3	0,1	58,4
«KRESIPRO» ("relative customer res.")	65	-2,5	10,8	-14,1	4,6

Exhibit 15 shows the correlation coefficients and significance levels between the variables which are considered, exhibit 16 presents model results[31] for the stepwise multiple regression analyses for each of the four customer groups. Exhibit 17 presents estimates of the regression coefficients as well as the standardised regression coefficients (beta) and the t-values.

Exhibit 15. Customer segments – correlation coefficients and significance levels (in parentheses) between the variables which are considered in the regression analyses for the four customer groups.

Customer group/ model no. :	Number of respondents (N)	(SATKVAL, ASATIS)	(SATPRIS, ASATIS)	(SATKVAL, SATPRIS)
Model no. 1	11	0,666 (0,013)	-0,233 (0,246)	-0,260 (0,220)
Model no. 2	22	0,401 (0,032)	-0,015 (0,473)	0,115 (0,305)
Model no. 3	10	0,053 (0,442)	0,772 (0,004)	0,152 (0,338)
Model no. 4	22	0,532 (0,005)	0,218 (0,164)	0,072 (0,374)

Exhibit 16 shows that one of the models is significant at the 0,01-level, three are significant at the 0,05-level, and all four models are significant at the 0,1-level. The model which do have the weakest fit is the one analyzing the 22 customers that have been classified as less satisfied and less loyal than the average. This group is not the most interesting one, cf. the discussion below.

Exhibit 16. Customer segments – model results for stepwise multiple regression analyses for each of the four customer groups.

	R	R^2	R^2adj.	F-verdi	Sign. F
Model no. 1	0,666	0,443	0,381	7,159	0,025
Model no. 2	0,401	0,161	0,119	3,828	0,065
Model no. 3	0,772	0,596	0,545	11,787	0,009
Model no. 4	0,532	0,283	0,247	7,892	0,011

Each of the four stepwise, multiple regression analyses is stopped after the first iteration which means that only one antecedent[32] of customer satisfaction is included in each of the

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[31]Both analyses of unstandardized residuals (Kolmogorov-Smirnov with Lilliefors significance correction and Shapiro-Wilk) as well as indicators related to multicollinearity (tolerance and VIF) show satisfactory results for each of the four regression models.

[32] It should be mentioned that the lowest F-value for the inclusion of more than one of the antecedents of customer satisfaction in one of the models is at the 0,35-level.

analyses. Exhibit 17 shows which of the two proposed antecedents of customer satisfaction that is included in each of the models. It appears like the variable «SATKVAL» can explain most of the variation in customer satisfaction for the customer groups no. 1, 2 and 4. The variable «SATPRIS» can explain most of the variation of customer satisfaction for customer group no. 3. It should be noted that the variable «SATPRIS» seems to explain a larger proportion[33] of the variation in customer satisfaction for customer group no. 3 than is the case for the variable «SATKVAL» for the customer groups no. 1, 2 and 4.

Exhibit 17. Customer segments – estimates of regression coefficients, etc. («SATKVAL» and «SATPRIS»).

	Arithmetic mean	Standard-error	Std. coeff. beta	t
Model no. 1:				
Constant	1810,849	858,424		2,110[d]
SATKVAL	34,231	12,794	0,666	2,676[c]
Model no. 2:				
Constant	766,432	1110,177		0,690
SATKVAL	34,926	17,852	0,401	1,956[d]
Model no. 3:				
Constant	1609,672	1623,379		0,992
SATPRIS	78,820	22,958	0,772	3,433[b]
Model no. 4:				
Constant	5365,720	837,611		6,406[a]
SATKVAL	27,730	9,871	0,532	2,809[c]

[a] $p < 0,001$
[b] $p < 0,01$
[c] $p < 0,05$
[d] $p < 0,1$

The analyses have uncovered that there seems to be differences between the four customer segments or customer groups concerning which of the antecedents of customer satisfaction

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[33] The number of observations may be increased from 65 to 80 if there is no requirement concerning customer profitability figures. The distribution of respondents on each of the customer groups is than as follows: (1) 12 customers, (2) 27 customers, (3) 15 customers and (4) 26 customers. Four stepwise multiple regression analyses reveal that the same variables are included into the models as antecedents of customer satisfaction, that is analogous with the results presented above. Furthermore, the estimates of the regression coefficients are not substantially changed, but the levels of significance and their ability to explain variations of customer satisfaction is considerably increased. This is the case for all of the four models, but most of all this is the case for the regression analysis for the customers belonging to group no. 2. Thus, these calculations contribute to validate the results presented above.

that have the strongest degree of correlation with customer satisfaction. And the customer segment with the customers that are "more than median satisfied, but less than median loyal" (customer group no. 3) is different from the other three segments. It seems as if these customers emphasize «price components» much stronger than the rest of the customers. This is further addressed in the discussion below.

5.4.2. Customer segments – differences in customer profitability

Exhibit 14 shows rather large differences of profitability between the customer segments. Customers that are satisfied and loyal seem to be more profitable than the rest of the customers, that is in accordance with the fourth hypothesis in section 3. It appears like the differences of profitability (relative customer results) are rather large, but there are also large variations within each of the customer groups. This may be further analysed. Here, the simple t-test may used to test if there are differences between group no. 4 and the other customers. Exhibit 15 presents descriptive statistics related to a t-test for the two groups.

Exhibit 18. Descriptive statistics for relative customer results («KRESIPRO») for the two customer groups of the customer relationship sample.

Customer groups	Number of observations (N)	Aritmetisk mean	Standard error
(4) Most satisfied and most loyal	22	1,88	1,29
(1-3) The rest of the customers	43	-4,75	1,82

In order to test if the variances may be said to be the same for the two groups, the "Levenes-test" for homogeneity-of-variance can be used. In this analysis the F-value is 5,223 (p<0,026). Consequently one can not assume homogeneity-of-variance, and thus the results are as follows (one-tailed test): t = 2,968 (p<0,004; 63 degrees of freedom). The t-test provides support for the formulated hypotheses (H_4). The «most satisfied and loyal customers» (the customers of group no. 4) also seem to be more profitable than the rest of the customers.

Analogous t-tests have been carried out for each of the groups, that is between customer group no. 4 (the most satisfied and loyal customers) and each of the three other groups. For all of the tests there are revealed differences of customer profitability, which are statistically significant at the 0,05-level. Consequently, one can assume that customers that are both more

satisfied and more loyal than the average seem to be more profitable than the rest of the customers. Furthermore, it can be asserted that customers that are highly satisfied but less loyal than the average customer, and customers that can be said to be highly loyal but less satisfied than the average customer, are less profitable than the customers that are both highly satisfied and highly loyal.

5.4.3. Quality and profitability – some conclusive comments

Because of the fact that the set of data is cross-sectional one has to be very careful to assume that there exist certain causal relationships between the variables in the customer relationship model. Consequently, the following comments must take into consideration this understanding.

Analyses of four customer segments divided by degrees of customer satisfaction/customer loyalty have revealed that the customers belonging to the different groups seem to have different preferences concerning the antecedents of customer satisfaction. Customers in the group "above median satisfied but below median loyal" seem to prefer "price components" rather than "quality components". The rest of the customer groups seem to have the opposite decision with respect to priorities. Furthermore, differences in profitability are revealed between the customer segments. It seems that the customers who are "more than median satisfied and more than median loyal" are more profitable than the rest of the customers. This provides support for hypothesis H_4: "The more satisfied and loyal a customer tends to be, the higher is the obtained customer profitability".

These findings may be interpreted in this way. Customer satisfaction above median which is "price-related" do not result in higher customer loyalty. On the other hand, it seems like customer satisfaction that is "quality-related" results in higher customer loyalty. Based on this thinking one should remember that the estimated customer results are considerable lower for the customers belonging to group 3 than for the customers belonging to group 4, cf. exhibit 14. The mean difference for relative customer results between the two groups amount to more than 6 percent-points in favour of group no. 4 and the difference is significant at the 0,05-level. Even greater is the difference for relative customer results between the customers belonging to group 4 and the rest of the customers, cf. exhibit 18. It should also be noted that differences with respect to relative customer profitability of such a magnitude (more than 6

percent-points) constitute about 800 percent of the average relative customer results that is found for all of the 176 customers in the study, that is for all the customer of the "customer profitability sample" (Helgesen, 1991a; 1999b). Consequently it may be asserted that the differences are great.

The set of data can be analysed further in order to give more detailed estimates of the relationships between the variables under consideration, for example, with respect to the calculation of optimal levels of the antecedents of customer satisfaction, cf. the discussion above. Furthermore, these calculations may be incorporated into more complex models which may constitute a business model of a firm (see e.g. Kaplan & Norton, 1996b; Ittner & Larcker, 1997; Rucci & al., 1998). However, this is not the purpose of this working paper. Nevertheless the revealed results should be of great interest for managers and might also have important managerial implications.

6. DISCUSSION AND MANAGERIAL IMPLICATIONS

The findings above are in accordance with the basic theories of total quality management (TQM), with the marketing concept and with the customer relationship orientation, cf. exhibit 1. There seems to be a positive relationship between quality-related antecedents of customer satisfaction and customer satisfaction, between customer satisfaction and customer loyalty, and there also seems to be a positive relationship between customer loyalty and customer profitability. The analyses that are carried out at the individual customer level also imply that increased quality-related customer satisfaction seems to be positively related to increased profitability. Thus, support is provided for the formulated hypotheses which all are in accordance with the basic theories of total quality management and relationship marketing. It should be mentioned that the customers of the Norwegian exporters of fish products are located in various geographical areas. Between the various groups of customers there seems to be very small differences concerning the importance of customer satisfaction as a key driver of customer loyalty and customer profitability.

The statistical analyses that are carried out reveal significant results concerning the correlation between the variables of each of the four links in the customer-orientation model, cf. exhibit 1. Generally speaking, the relationships under consideration are all found to be non-linear. It

seems as if the degree of correlation between the variables is positive but declining. Furthermore, the anticipated independent variables seem to have to be above certain levels in order to have any impact on the anticipated dependent variables.

Customer satisfaction seem to have a much larger degree of correlation with quality-components than with price-components of the antecedents of customer satisfaction. The higher the perceived values of these antecedents, the higher the perceived customer satisfaction tend to be, but the degree of correlation seems to be degressive which means that the relationships are weakening gradually. Analogous results are found for the other relationships. Both the relationship between customer satisfaction and customer loyalty and the relationship between customer loyalty and customer profitability seem to be positive at a declining rate. These findings provide support for the formulated hypotheses, cf. chapter 3. It is probably of great interest for the managers to get further insight into these relationships that also include information about the various levels or thresholds for the variables under consideration. Furthermore, as long as the activities related to the achievement of the satisfaction of customers cost some money, the findings imply that an optimal level of customer satisfaction can be estimated. In order to perform such an analysis there is a need for estimates of customer profitability, that is both revenues and costs (Helgesen 1999a; 1999b). Costs related to the antecedents of customer satisfaction can then be compared with revenue and cost figures taken from customer accounts. In this way a company can establish cost-effective methods for the achievement of customer satisfaction. This insight into cause-and effects could serve as guidelines for decisions that may result in increased profitability.

The findings provide support for the formulated hypotheses, cf. chapter 3. Consequently, one may assume that: "The higher the perceived quality for the customer tends to be the higher is the satisfaction of the customer" (H_1); "The more satisfied a customer tends to be the higher is the loyalty of the customer" (H_2); "The more loyal a customer tends to be the higher customer profitability is obtained" (H_3); and "The more satisfied and loyal a customer tends to be the higher is the obtained customer profitability" (H_4). The last hypothesis is a logical implication of the two preceding hypotheses. However, it is also confirmed by splitting the sample into customer segments according to degree of customer satisfaction and customer loyalty. It was found significant differences of customer profitability between the customers of the group that are "more than median satisfied and more than median loyal" and the customers

of the other groups. In addition, the differences of relative customer results are rather high and amounting to about 6 percent-points. For an exporter this means that for each NOK 100 million the net result may increase with about NOK 6 million. Taking into consideration the actual level of net profits obtained in this line of business, this finding should be of great interest. But the recipe for obtaining such results should be of even more interest for these managers.

The analyses of customer segments according to degrees of customer satisfaction/customer loyalty suggest that the customers of the most profitable customer segment prefer quality in favour of prices. Comparing the findings of this customer group with the findings of the other groups, one may suggest that customer profitability to a large extent is driven by components of quality resulting in customer satisfaction and in customer loyalty. On the contrary, customer satisfaction that is driven by prices appears not to result in a lot of customer loyalty. In order to create a loyal and profitable customer the exporters therefore should focus on quality. Taking into consideration the large differences in relative customer results, it can be assumed and perhaps also maintained that "quality does pay".

This result is in accordance with earlier studies in this area (see e.g. Reichheld & Sasser, 1990; Page & al., 1996). In both of these publications the authors are focusing on the importance of quality concerning the creation of customer satisfaction and customer loyalty:

«The cost of keeping existing customers through attention to quality of service and practical marketing are significantly lower than the costs of acquiring new customers, and the financial benefits can also be substantially greater» (Page & al. (1996), op. cit. s. 834).

The findings seem to confirm that TQM may be very profitable. Customers that are satisfied and loyal because of quality-components of the offer of a supplier seem to be more loyal than the rest of the customers. But even more interesting for managers should be the finding that these customers also are much more profitable than the rest of the customers. By being both loyal and profitable the earning power may be maintained at a high level over time.

It should be noted that quality is much more than quality of the products. Of course, the quality of the products is important when the buyers are judging quality-components of the offer of a supplier. But other antecedents of customer satisfaction should also be considered, cf. the findings of chapter 5.1. These results seem to be in accordance with the findings of

Smith (1998). By way of two separate mail surveys the author demonstrate the effects of services ancillary to the products offerings to generate future purchase intentions in industrial markets. Specifically, satisfaction with telephone service was found to be the most important predictor of future product purchase intentions – larger than either delivery service satisfaction or product satisfaction, although all three were significant predictors. One should remember that customers purchase more than just a product. They purchase a bundle of attributes, some tangible and some intangibles. Thus, industrial suppliers could attempt to differentiate their products by adding or improving services ancillary to the physical items supplied. For example, a company might add telephone order/help lines or delivery services in an attempt to win customer loyalty, cf. the findings of part 5.1. in this working paper.

It should be mentioned that customer satisfaction seems to be of great importance for companies with customers that have good knowledge of both products and the market, and/or for companies that are selling products that can be categorized as generic products (which is products that are not too complex) (Anderson & Sullivan, 1993). The customers of the Norwegian exporters of klipfish and frozen products/filets have good knowledge of these products. Besides, the products may be perceived as generic. Thus, the exporters should be concerned with the variations in customer satisfaction and the effects of the various antecedents on this key driver of customer loyalty and customer profitability. And, according to the findings the exporters should be especially concerned with the quality-components.

Striving for quality or the implementation of total quality management (TQM) appears to be somewhat difficult. Usually, TQM is linked to corporate culture. Zairi (2000) asserts that there is a total interdependency between the two. TQM can help shape and improve organizational cultures that are focused on quality. In other words, an existing culture that is focused on quality can facilitate the way TQM can be effectively implemented:

- "The pre-requisites are related more to senior management commitment to change than to having the right climate at first place.
- Culture of TQM needs to be shaped rather than grabbed by the "horns". Culture is a "soft" outcome. It depends on the right values to be inculcated, the right policy, the right structure, the right systems, the right people and the right skills.
- An effective TQ-based culture will very much depend on effort, energy, belief and sustainable vision and dedication. Culture cannot be changed or developed rapidly, nor can it be totally transferable. Some people refer to a process called acculturation" (Zaire, 2000, op. cit. p. 9-10).

Consequently, management of people plays a key role in implementing TQM in an organization. Human resource management can for instance be carried out by investigating: (1) Leadership, which includes top-management commitment, the way in which the company shows its appreciation for the good work of employees and the support it gives to them; (2) Typical human resource management, which includes training and development, involvement, communication, empowerment, teamwork and the system of appraisal; and (3) People satisfaction, which includes the feedback mechanisms and action plans (see e.g. Heaphy & Gruska, 1995; Oakland, 1995; EFQM Model for Business Excellence, 1999).

In order to succeed with the implementation of TQM, there is a need for an understanding of causes and effects. Therefore, TQM is usually based on models that may be used as business models for a company. With the proper databases, various cause- and effect models or relationships may be analyzed. Over time this may provide insights about the causalities under scrutiny and reveal the drivers that seem to have the strongest influence on the performance of the business. By putting the variables and the results together into a scoreboard, the decision makers get a multi-dimensional insight into the decision situation. Such a «balanced scorecard» can be viewed as a natural part of the managerial accounting information that is used by the managers of a company (see e.g. Richardson & Gordon, 1980; Sloma, 1980; Globerson, 1985; Wisner & Fawcett, 1991; Kaplan & Norton, 1992, 1993, 1996a, 1996b; Lebas, 1996). Measures of customer satisfaction and customer loyalty are usually included in such scorecards, but measures of customer profitability and antecedents of customer satisfaction also should be taken into consideration.

In order to carry out analyses of cause- and effects where a measure of customer profitability represent the ultimate variable, there is a need for reliable figures for customer profitability. Causal "Images of Customer Profitability" (ICPs), that is images indicating nexuses of causes and effect relationships, can only be worked out when «descriptive» ICPs are established. Thus, reliable ICPs form the cornerstone of such models.

There are many other reasons for establishing ICPs (Helgesen, 1999a; 1999b). For example, managers need to ensure that customers contributing considerably to the profitability of the organization also receive a comparable level of attention from the organization. Moreover, managers have to consider whether customers that are unprofitable (over some time) should

be excluded. A managerial accounting system that reports and compares customer profitability provides the managers with information to carry out such important considerations and tasks.

7. LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

Even if the findings of this working paper may be perceived as rather convincing and supporting "the paradigm of quality" some limitations should be mentioned. The suggestions below may hopefully provide some guidelines for further research in this area of managerial economics.

The sample of relationships in this study consists of only 67 respondents because of limited sample-size and defections of customers. Nevertheless, the number of respondents appears at least for the most part to be satisfying in relation to the statistical methods used. Furthermore, the samples that have been related to the variables or links of the customer relationship model, cf. exhibit 1, are used to validate the results presented. Nevertheless, if the number of respondents had been higher, a more comprehensive analysis could have been carried out, that is an analysis that simultaneously[34] take into consideration all the variables of the four links of the model of customer relationships, cf. exhibit 1. Even though the limitation with respect to sample-size do not have any effects concerning the statistical conclusive validity of the findings, it has an impact on the interpretation of the relationships under consideration. Thus, more respondents could have increased the insight gained by the models, that is the relationships between antecedents of customer satisfaction, customer satisfaction, customer loyalty and customer profitability.

It should be emphasized that only one analysis with a context taken from order-handling industry, which in this study are Norwegian exporters of fish products and their customers, might not be perceived as sufficient for the documentation of this "much talked about relationship". Therefore, additional analyses should be carried out and published. Because of the supposed generality of the relationships it is also recommended that other contexts are being used. Furthermore, other antecedents of customer satisfaction might be included in the

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[34] This can be carried out by using structural equation modeling (e.g. LISREL) (see e.g. Bollen, 1989; Hair & al., 1995).

studies. But this will among other things depend on the context that is chosen. Hopefully more analyses will be carried out at the individual customer level for all links of the customer relationship model (cf. Helgesen, 1999a; 2000).

With respect to profitability, the marketing concept is based mainly on a long-term perspective. Thus, the analyses should be based on a time series design and not on a cross-sectional design as presented in this working paper. By collecting necessary data over time various analyses of causes and effects may be carried out. Such analyses are prerequisites for showing the positive links between the drivers of the customer relationship model and long-term profitability. In this way it is possible to get profound insight about the causalities. Many companies are making surveys concerning antecedents of customer satisfaction, customer satisfaction and customer loyalty. To the contrary, very few firms have good knowledge of the costs incurred and the profitability obtained by exchanges (see e.g. Shapiro & al., 1987; Howell & Soucy, 1990; Reichheld & Sasser, 1990; Selnes, 1992; Foster & Gupta, 1994; Connoly & Ashworth, 1994; Foster & al., 1996). Consequently, this area of managerial economics may be perceived as a focal area for elaborating such an understanding of the most relevant cause- and effect relationships.

The results show that variations in the antecedents of customer satisfaction can explain about 66 percent of the variation in customer satisfaction (cf. chapter 5.1.2.). However, variations in customer satisfaction can only explain about 10 percent of the variations of customer loyalty, and variations of customer loyalty can only explain about 10 percent of the variations of customer profitability. Concerning the relationship between antecedents of customer satisfaction and customer satisfaction, the degree of explication is satisfactory and in accordance with findings in analogous analyses. However, concerning the relationship between customer satisfaction and customer loyalty the degree of explication is rather low (see e.g. Fornell, 1992; Fornell & al., 1996; Anderson & al., 1994; 1997; Andreassen, 1994; 1998; and results from various national customer satisfaction barometers). Yet, the findings may be said to be in accordance with earlier studies (cf. Oliver, 1999; Helgesen, 2000), which implies that the variations in customer loyalty only partly can be explained by variations in customer satisfaction. To explain the rest of the variations other variables have to be added into the models. Concerning the relationship between customer loyalty and customer profita-bility, comparisons are much more difficult to do because only a few studies exist and because

these studies are not based on a thorough analysis of customer accounts at the individual customer level. Nevertheless, these results suggest that other variables also should be incorporated into the chosen models. This suggestion may be perceived as self-evident. Variations in customer satisfaction may be supposed to be more easily traced to variations of antecedents of customer satisfaction than for instance variations of customer profitability in relation to customer loyalty. In order to explain variations in customer profitability a lot more variables are likely to be influential and should be used (Helgesen, 1999a).

Customer relationship orientation may be perceived as a part of the market orientation of a firm, cf. chapter 2 above. Therefore, the model showing the main concepts of this orientation, cf. exhibit 1, may be looked upon as a part of more comprehensive models (see e.g. Kohli & Jaworski, 1990; 1993; Narver & Slater, 1989; 1990). Besides, the customer relationship model also may be perceived as being a part of various TQM-models (see e.g. Heaphy & Gruska, 1995; Oakland, 1995; Mohr-Jackson, 1998; EFQM Model for Business Excellence, 1999). By tracing cause- and effect relationships between variables according to such more complex models, the insights are likely to be much higher. Furthermore, more complex models are probably more in accordance with "the real world". However, complexity has to be balanced with suitability and "parsimony". Besides, it is highly desirable that more studies are carried out according to the models related to customer relationships and preferably also before the variables might be incorporated into more complex models.

8. CONCLUSION

Superior quality is supposed to be positively related to superior business performances. At the aggregate company level this implies that businesses that are offering products and services of higher quality than the competitors, in the long run also should be earning higher profits. At the individual customer level superior quality is supposed to be positively related to customer satisfaction, the key driver of customer loyalty and customer profitability. This last understanding forms the cornerstone for the framework for this study. This is the foundation for the customer relationship orientation, which is based on conceptions about positive cause- and effect relationships between the following main variables: (1) antecedents of customer satisfaction; (2) customer satisfaction; (3) customer loyalty; and (4) customer profitability, cf. exhibit 1.

Even if the number of studies that are customer relationship oriented have increased a lot during the last decade, the attention has for the most part been devoted to concepts and relationships which may explain variations in customer loyalty. Only a few studies are examining consequences of customer satisfaction and the impact of customer loyalty on profitability. Furthermore, the few publications that exist are for the most part preoccupied with analyses of customer bases and are using measures of average costs in relation to the customers when estimating customer profitability. In this working paper all the four links of the customer relationship model are studied at the customer level, which perhaps may be called a "third-generation customer satisfaction model".

The context is taken from a sample of Norwegian exporters of fish products (klipfish and frozen fish) and their customers almost world-wide. Positive correlation coefficients were found between the variables, but the relationships seem to have degressive shapes. Thus, the findings suggest that customers probably do place more orders with suppliers they are satisfied with. The customers are most likely to strengthen their loyalty to these suppliers. Furthermore, customer profitability seems to increase with increasing levels of customer loyalty. According to this finding, it is of great importance to reveal which ones of the antecedents of customer satisfaction that have the strongest impact on customer satisfaction. And this study also reveals that for the average customer product and service quality have more to say for customer satisfaction than prices. Furthermore, by segmenting the sample of customers into subgroups according to levels of customer satisfaction and customer loyalty, it was found that the customers that are "more than median satisfied and more than median loyal" seem to be more preoccupied with quality than the rest of the customers. In addition, the estimates also suggest that these customers are much more profitable than other customers. Taking into consideration the high statistical validity of all of these findings, it may be maintained that this study has put forward evidence for the "quality paradigm" which forms the cornerstone of total quality management (TQM). Thus, it may be asserted that "quality does pay".

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