

Targeting customers: A financial approach based on creditworthiness

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Abstract Targeting is usually undertaken based on customer-based marketing metrics such as geography, demography and usage rates. A complementary approach is targeting using business unit-based customer metrics such as customer profitability figures and credit rating codes. The Norwegian fishing industry has been chosen for the context of this study because of its high level of attributable costs and reliable measures of profitability. Customer profitability accounts are described and international credit rating agencies have furnished credit rating codes for the same customers ($n=144$). Even if customer profitability increases with decreasing creditworthiness, the statistical results (significance levels) are not convincing. In order to manage customers for risk-adjusted profit, there is a need for an information system that provides customer metrics necessary for decision making that at a minimum include customer profitability accounts and credit rating codes for each of the customers. In this way, customer credit risks can be properly compensated for.

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INTRODUCTION

Targeting customers is one of three processes that is usually perceived as being at the core of marketing strategies, with the other two being segmentation and positioning.^{1–4} Segmentation is defined as the process of partitioning the market into several parts or segments, targeting as the process of evaluating and selecting one or more segments, and positioning as the process of designing distinctive offerings and images for target markets. All three processes are perceived and defined in various ways.^{5–8}

Usually, targeting is defined as ‘the process of selecting the right target market for a company’s products and services’ or as ‘the process of evaluating each segment’s attractiveness and selecting one or more segments to enter’.^{9,10}

In order to identify the right target markets, an analysis of segment attractiveness (size, growth, competition, etc) and business strength is generally recommended.^{11,12} In recent years, additional ideas and definitions for these concepts have been proposed.^{13–15} One approach defines customer targeting as ‘finding and keeping the customers who are profitable and loyal’.¹⁶ Another defines targeting as ‘the strategy to allocate the company’s resources effectively’.¹⁷ Because resources are always limited, their allocation should be undertaken in such a way

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that customer value is created for the targeted customers and economic customer value is created for the business unit.^{18–20} This duality with respect to customers and businesses is in accordance with the various definitions of the marketing concept.²¹ Thus, financial aspects also should be considered when targeting customers. Financial aspects include such topics as customer profitability accounting and customer profitability analysis, risk evaluations regarding cash flows and customer portfolio considerations.

The purpose of this paper is to offer a financial, risk-based approach for targeting customers and market segments, with the Norwegian fishing industry as the context. This industry is characterised by high attributable costs (about 98 per cent), which suggests that measures of profitability are reliable. This industry is also characterised by worldwide export activities. Thus, cash flow risks are related to various risk aspects, often grouped as political, economic and commercial risks.^{22–24} Here the focus is on commercial risks or, more specifically, on customers' creditworthiness (credit rating codes) and credit risks. The combination of figures from customer profitability accounts and credit rating codes provides financial, risk-based information for decision makers. Decisions and business performance are closely related, which means that the profitability of a business can only be improved in decision situations.^{25,26}

A BRIEF LITERATURE REVIEW

Customer profitability accounting and customer profitability analysis

A growing body of literature has focused on market-oriented managerial accounting since about 1990, particularly with respect to customer profitability accounting and customer profitability analysis.^{27–29} Some efforts have mainly addressed problems that must be solved to establish reliable customer profitability figures.^{30–32} Others have used a cost accounting approach, suggesting that they are mainly preoccupied with various cost problems.^{33–36} Some researchers have treated 'theoretical' aspects, such as the lifetime economic

value of a customer, or the balancing of acquisition and retention resources in order to maximise customer profitability.^{37–39} Still other researchers have focused on contexts, empirical results, practical approaches and case studies.^{40–45} Additionally, some researchers have studied customer segments and have offered methods for analysing segments and for preparing segment-oriented key figures.^{46–48} Even though the number of topics treated and papers published is on the increase, there remains a need for more research and publications, particularly concerning approaches that are of specific interest to practitioners.

Creditworthiness of customers – Credit risks (rating codes)

Generally, deterministic models are used to estimate customer profitability, but these approaches are often overly simplistic.⁴⁹ Usually, industries and firms are confronted by a range of uncertainties, of which volume and prices traditionally have received the most attention.⁵⁰ These factors are of critical importance for export companies. International business-to-business marketing is, however, characterised by various risk elements.^{51–53} Here the focus is on credit risks.

Credit risks or payment risks can be reduced or even eliminated through the use of prepayments, commercial letters of credit, cash against documents (CADs) or through various credit insurance arrangements.⁵⁴ Delayed remittances usually result in extra costs for a company. Insufficient payment or no payment generally results in direct losses.

Credit risks are usually accepted when adequate risk premiums are offered.^{55–57} This suggests that decision makers can accept increased credit risks when customers pay adequate financial compensation. The use of open accounts for customer sales should therefore only be undertaken when different risk premiums are used to reflect differing customer creditworthiness. Customer creditworthiness codes may therefore be seen as a measure for assigning payment risks (the commercial risk) related to transactions with the actual customer.⁵⁸ Thus, a rating code or a

code for the solvency of a customer may be looked upon as providing very concentrated credit risk information or a synthesis of information related to the rating of the legal entity.^{59–61}

Credit reports that include customer rating codes are prepared by credit rating agencies and have various applications. They are primarily used as a decision support mechanism for business unit executives and marketers, but may also be used as the basis for credit limit applications (warranties) from credit insurance companies. If a credit report says that a customer may be perceived as not creditworthy, export company decision makers usually try to take precautions by using prepayments, commercial letters of credit, CADs and similar protection tools. Credit rating codes are available both for companies and countries.^{62,63}

METHODOLOGY

This study focuses on Norwegian klipfish and frozen fish exporters as an industry that features a high level of attributable costs (about 98 per cent). As noted earlier, the lack of arbitrary allocations suggests that uncertainties are low in terms of profitability measures. Four exporting companies have been chosen as the context. They transact business in an almost worldwide market, oriented towards various product markets (geographical areas) and market segments. There are a great number of players on both the buyers and sellers' sides. Importers buy products from several exporters, who are often located in different countries.

Two of the companies in the sample export klipfish, while the other two export frozen fish/filets. None had ever prepared customer accounts or customer profitability analyses in a systematic way. They all had well-organised systems for managerial accounting, however, which meant that most of the necessary information was easily available. Customer credit rating reports, including credit rating codes, were provided by a factoring company that had obtained the information from international customer rating agencies.⁶⁴

Customer accounts in a market hierarchy

In the development of market-oriented profitability accounts for this industry (the order handling industry), a market hierarchy was selected, composed of orders, customers, markets and business units. Revenues and costs were separated into 12 different main groups, with one revenue group and 11 cost groups as presented in Table 1. This table also provides terminology and the assignment of costs to the different levels of the market hierarchy. Both direct and the indirect costs were assigned to the level where they were incurred (orders, customers, markets, etc). All the revenues were related to the order level. The costs of the orders were subtracted from the revenues from orders. In this way, the order profit could be estimated for each order. Then revenues and costs from orders were transferred to the customer level. The customer profit for a given period was 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 revenues and costs from the customers were used on the market level. The market profit for a given period was the aggregate revenues from the customers that were related to the actual market less the aggregate

Table 1: Income (revenue), cost groups and cost structure of the market hierarchy ($n=144$)

	Revenue/costs	Arithmetic mean (%)
1	Incomes (revenues)	100.00
2	Incomes (revenue) reductions	0.03
3	Direct product costs	90.48
4	Direct market costs that are related to orders	7.07
5	Direct market costs that are related to customers	0.04
6	Direct market costs that are related to markets	0.08
7	Direct market costs that are related to business units	—
8	Direct capital costs that are related to orders	0.85
9	Indirect market costs that are related to orders	0.78
10	Indirect market costs that are related to customers	0.19
11	Indirect market costs that are related to markets	0.32
12	Indirect market costs that are related to business units	—

customer and the market-related costs. Profits from the strategic business unit were estimated in an analogous manner. Thus, item numbers 1, 2, 3, 4, 8 and 9 were included in the accounting reports at the order level. The same items were included at the customer level, but at a customer-aggregated level. Additionally, item numbers 5 and 10 were included. The same items were included at the market level, but at a market-aggregated level. Additionally, item numbers 6 and 11 were included. All 12 revenue and cost groups were included at the business unit level. Table 1 also presents the market hierarchy cost structure. The costs were rather high, although there was a surplus when all costs were deducted from revenues. This is discussed below in more detail.

The original customer profitability sample consisted of 176 customers. For financial reasons, however, credit rating codes from international credit agencies were only obtained for 144 of these customers, as discussed below.

The rearrangement of the accounting figures was worked out in close collaboration with the marketers, accountants and managers from the selected export companies. There was no disagreement concerning the results. The orders included in the sample were selected at random; several succeeding orders were analysed to simplify the balancing work. The sample, representing about 3.5 per cent of the total Norwegian product exports from this business sector, was analysed at the market level, with a comparison of the four exporters' market revenue figures to the total Norwegian export figures to each of the 31 geographical markets for this business sector for the period of interest. The analysis showed a strong and significant correlation ($r=0.809$; $p<0.001$). In addition, the 20–25 most important geographical markets for this sector of the Norwegian fishing industry were represented in the sample. Thus, it may be asserted that the sample was representative of the population within the bounds of a small sample.

Credit reports – Customer credit rating codes (creditworthiness)

Customers may be classified with respect to credit risks or assigned credit ratings in a variety of

ways. The greatest emphasis is usually placed on financial aspects, such as liquidity, solidity, profitability and financial structure; however, features such as market opportunities and the abilities and qualifications of managers are also considered.^{65–67} Even though the classification work with respect to the solvency of customers is generally based on objective criteria, the rating codes are clearly subjective. It should be noted, however, that customer credit rating codes (risk classes) as well as credit limits are often assigned by credit committees (based on reports prepared by credit analysts). Generally, a credit committee has three to five members who have appropriate education and experience. The composition of the committee and the procedures carried out with respect to decisions taken should ensure that the credit rating codes are reliable.

The factoring company that provided the credit risk reports for this study uses a credit committee to judge the creditworthiness of each customer and decide the credit rating code of the customer as well as the maximum credit limit that can be offered. From time to time, the maximum level of the credit limit exceeds the authority of the credit committee, implying that decisions have to be taken by the board of directors. When taking decisions, all relevant information is carefully balanced, including financial aspects as well as market opportunities and the ability of management. Decisions are usually unanimous; however, they may represent a compromise among different views. The customers in this study were assigned to four risk groups according to an increasing degree of solvency (decreasing credit risks): (1) low creditworthiness, (2) medium low creditworthiness, (3) medium high creditworthiness and (4) high creditworthiness. Thus, the higher the rating code (classified from 1 to 4), the higher the creditworthiness.

The initial sample consisted of 176 customers. For financial reasons, a random sample of 150 of the 176 customers was selected. For 6 of these customers, sufficient information was not available, which left 144 customers in the final sample of customers for whom credit ratings were

established. The 32 customers that were not assigned ratings were treated as a separate group of customers and were compared with the other four groups. No statistically significant differences with respect to customer profitability figures were found between this customer group and the other four groups. Consequently, it can be maintained that the customer credit sample was representative of the population within the bounds of a small sample.

RESULTS

Customer profitability accounts

A number of aspects have to be considered when establishing reliable profitability figures for customer accounts.^{68,69} In this study, an activity-based costing (ABC) approach was used.⁷⁰⁻⁷²

Costs were assigned to the marketing hierarchy level where they were incurred (orders, customers, markets, etc). All revenues were related to the order level. Order costs were subtracted from order revenues. In this way, profits could be estimated for each order. Revenues and costs from orders were then transferred to the customer level. The customer profit for a given period was the aggregate revenue from orders related to the actual customer, less the aggregate cost from the same orders as well as customer-related costs.

The context selected for this study simplified the assignment of costs because the export companies' product costs were easily determined from invoices received from producers, with all other exporter costs related to different kinds of marketing costs. Nevertheless, in order to calculate profitability reports, all accounts and vouchers still had to be thoroughly reviewed. In this way, about 98.5 per cent of the total costs were traced and assigned directly to the cost objects associated with the various market hierarchy levels. Thus, only 1.5 per cent of the costs (indirect costs) had to be consolidated into cost pools and allocated to the various cost objects in accordance with an ABC approach.

Table 2 presents customer account report averages, while Table 3 shows descriptive statistics for important customer account items. Items

Table 2: Customer accounts — Averages ($n=144$)

	Norwegian Kroner (NOK)	Per cent
Customer income (customer revenue) (CI)	1,155,627	100.00
– Customer revenue reductions	396	0.04
= Net customer revenue	1,155,231	99.96
– Direct customer product costs	1,045,652	90.48
= Customer product margin (CPM)	109,579	9.48
– Direct order-related marketing costs	81,763	7.07
– Direct customer-related marketing costs	413	0.04
= Customer operating margin (COM)	27,403	2.37
– Direct customer-related capital costs	9,793	0.85
= Customer margin (CM)	17,610	1.52
– Indirect order-related costs	9,016	0.78
– Indirect customer-related costs	2,210	0.19
= Customer profit (CP)	6,384	0.55

resulting in sales revenue reductions (quantity discounts, bonuses, etc) are very moderate in this industry. Direct product costs carried greater weight, representing about 90.5 per cent of customer revenues on average. These costs consisted of purchasing and packaging costs, inbound freight costs and brokers' commissions. Table 3 shows that there were variations among customers. Direct marketing costs related to orders and customers represented about 7.1 per cent of customer revenues. These costs were comprised sales and distribution costs (outward freight, transport assurances and agent commissions), post-sale service costs (training, support, complaints, etc), customer relations (travel, representation, exhibitions, advertisements and advertising campaigns, etc) and other marketing costs (charges related to exportation, duties, taxes, etc). Direct customer-related capital costs represented about 0.8 per cent and consisted of discounting costs, capital costs,⁷³ bank costs, etc. The remaining costs were treated as indirect costs (fixed costs that were divisible) and were allocated to the different levels of the market hierarchy in accordance with an ABC approach. Indirect costs related to orders and customers represented about 1.0 per cent of customer

Table 3: Descriptive statistics for important customer account items ($n = 144$)

	Arithmetic mean	Standard deviation	10th percentile	90th percentile
<i>Absolute figures (NOK)</i>				
Customer income (customer revenue) (CI)	1,155,627	1,494,026	106,983	2,798,183
Direct customer product costs	1,045,652	1,373,371	89,166	2,532,299
Customer product margin (CPM)	109,579	134,458	3,115	283,782
Direct order-related marketing costs	81,763	106,020	2,695	184,634
Customer operating margin (COM)	27,403	51,438	-10,009	98,243
Direct customer-related capital costs	9,793	18,986	0	38,662
Customer margin (CM)	17,610	41,446	-10,009	64,947
Indirect order-related costs	9,016	14,121	1,588	16,765
Indirect customer-related costs	2,210	2,185	267	4,955
Customer profit (CP)	6,384	38,613	-14,274	47,707
<i>Relative figures (per cent)</i>				
Direct customer product costs	90.48	4.48	85.89	95.82
Customer product margin (CPM)	9.48	4.47	4.18	13.95
Direct order-related marketing costs	7.07	3.15	3.83	10.60
Customer operating margin (COM)	2.37	3.45	-0.66	5.31
Direct customer-related capital costs	0.85	0.99	0.00	2.35
Customer margin (CM)	1.52	3.18	-1.00	4.10
Indirect order-related costs	0.78	1.26	0.18	1.66
Indirect customer-related costs	0.19	0.36	0.01	0.47
Customer profit (CP)	0.55	3.10	-2.68	2.65

revenues. Thus, on average, customers were only marginally profitable. The direct and indirect costs related to the market level of the market hierarchy represented only about 0.4 per cent of total costs. Thus, the businesses' profits were positive, although rather modest. Table 3 shows that customer profits in the range selected (10–90 per cent) varied from about Norwegian Kroner NOK) -14,300 to about NOK +47,700.

Table 4 presents important customer account items for each of the four Norwegian exporters. This table shows that the number of customers included in the sample varied from 23 (Company D) to 44 (Company B). Table 4 also shows that the averages for both the absolute and relative figures differed. Customers from Company D were on average unprofitable. For the three other companies, the average customer profit was positive.

Customer quality classes based on credit rating codes (creditworthiness)

Table 5 provides an overview of customers in each credit category (for example, 20 in 'low

creditworthiness' (rating code '1') representing 13.9 per cent of the number of customers). This table also shows the percentage of customer incomes (customer revenues) and customer profits for the four credit rating groups. This is shown for the whole sample as well as for each of the four export companies. For example, 12.4 per cent of customer revenues came from customers with a credit rating of '1', but these customers represented about 14.5 per cent of the aggregated customer profit of the sample.

By inspecting the customer profits for each of the four credit rating groups, a pattern seems to appear. The most creditworthy customers seem to be less profitable than the less creditworthy customers. This is caused both by lower prices and higher costs. The overall picture is unclear, however, and raises questions that will be examined in subsequent parts of this paper.

The information presented in Table 5 can be condensed by calculating the weighted averages of the rating codes using the proportions of four credit rating classes as weights. This is also included in table. Thus, the 'Customer income quality code' for Company A was calculated by multiplying '1' by '0.056' plus '2' multiplied by

Table 4: Customer accounts for each of the four companies — Averages for some important items

	Company A	Company B	Company C	Company D	Total (A–D)
Number of customers	35	44	42	23	144
<i>Absolute figures (NOK)</i>					
Customer income (customer revenue) (CI)	1,305,990	1,281,104	1,085,230	815,323	1,155,627
Customer product margin (CPM)	151,736	125,955	92,177	45,873	109,579
Customer margin (CM)	34,936	19,365	11,322	–626	17,610
Customer profit (CP)	11,355	11,416	3,474	–5,492	6,384
<i>Relative figures (per cent)</i>					
Customer product margin (CPM)	11.62	9.83	8.49	5.63	9.48
Customer margin (CM)	2.68	1.51	1.04	–0.08	1.52
Customer profit (CP)	0.87	0.89	0.32	–0.67	0.55

Table 5: Percentages of customers in the various creditworthiness quality classes ($n=144$)

	Rating code	Company A	Company B	Company C	Company D	Total (A–D)	No. of customers	Percentages of customers
<i>Customer income quality</i>								
Low creditworthiness	1	5.6	17.4	13.9	10.4	12.4	20	13.9
Medium low creditworthiness	2	62.3	36.3	22.0	41.1	40.0	62	43.1
Medium high creditworthiness	3	27.8	46.3	41.0	31.7	38.1	48	33.3
High creditworthiness	4	4.3	–	23.1	16.8	9.4	14	9.7
Customer income quality code		2.31	2.29	2.73	2.55	2.45	144	100.0
<i>Customer profit quality</i>								
Low creditworthiness	1	12.0	15.4	55.5	–57.3	14.5	20	13.9
Medium low creditworthiness	2	97.9	54.1	22.6	–47.0	69.0	62	43.1
Medium high creditworthiness	3	11.0	30.5	116.2	40.0	45.4	48	33.3
High creditworthiness	4	–20.9	–	–94.3	–35.7	–28.9	14	9.7
Customer profit quality code		1.57	2.15	0.72	–1.74	1.73	144	100.0

'0.623' and so forth. Similarly, the 'Customer profit quality code' was calculated by multiplying '1' by '0.120' plus '2' multiplied by '0.979' and so on. On average, the 'Customer income quality code' was 2.45, suggesting that regarding customer incomes, the average customer was categorised as having 'medium high creditworthiness'. There are some differences among the four export companies. The 'Customer profit quality code' averaged 1.73, suggesting that the average customer was categorised as having 'medium low creditworthiness' in terms of customer profits. Thus, the average of this measure was much lower for customer profits than for customer

incomes. Additionally, the differences among the four companies were much larger for customer profits than for customer incomes. The results of these two 'quality code measures' are illustrated in Figure 1, which shows a comparison of findings for the four companies. These indices can also be used when studying the same business unit over time.

It should be underscored that the calculation of the two 'quality code measures' ('credit goodness measures') was based on an important assumption regarding measurement levels for credit rating codes. The calculations presented above assumed that the rating codes had been

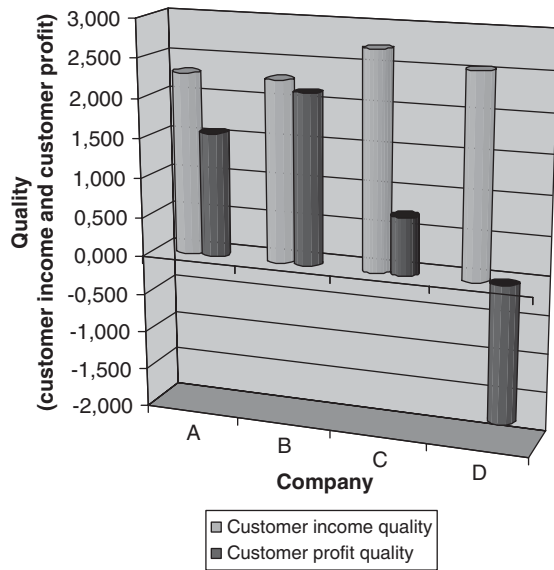


Figure 1: Customer income quality and customer profit quality for the four companies

measured at an interval level. Nevertheless, the approach can be looked upon as providing some insight, with the caveat that the resulting numbers are not 'exact'.

Credit rating codes (creditworthiness) → customer profits (customer profitability)

For each of the 144 customers, detailed customer profitability accounts were available. Here the focus was on customer profits. Accordingly, Table 6 presents descriptive statistics for customer profits from the four credit rating groups. It should be noted that the figures in Tables 2 and 6 are not comparable. Table 2 presents averages for all of the 144 customers. In reality, the relative figures in Table 2 such as relative customer profit are calculated as weighted averages using customer revenues as weights. In Table 6 no weights were used. This table was just based on the relative customer profits obtained from the individual customer for the period of time under consideration. Table 6 shows that the average customer was unprofitable. Even if the average relative customer profit was negative, customers were still profitable on average, as has been discussed above and shown in Table 2.

The first part of Table 6 presents descriptive statistics for the relative customer profits for the four credit risk classes. This table shows that the customer profit means declined with increasing creditworthiness. An appropriate question is whether the variations of the relative customer profits from Table 6 are attributable to natural variations that may be expected in four samples from the same population, or whether they have resulted from variations that are so great that there is reason to believe that the observations have come from different populations.^{74,75} The *F*-value [$F(3,140) = 2.281, p < 0.082$] and *post hoc* comparisons (Tukey's HSD) indicate that there were no statistically significant differences among the four groups. This implies that there were no statistically significant differences regarding relative customer profits among the four groups of customers with respect to creditworthiness (at the 0.05 significance level).

A closer look at the differences among the four groups suggests that it might be appropriate to form two groups instead of four, with one group for the two lowest credit rating groups and one group for the two highest credit rating groups. The second part of Table 6 presents descriptive statistics for these two new customer groups. The first group consists of 82 customers and the second of 62. The average relative customer profit for the first group was 0.17 per cent and was -3.70 per cent for the second. The Levene's test for equality of variances has an *F*-value of 6.525 ($p < 0.012$), which indicates nonequality of variances, giving the following result for the test of the hypothesis (one-side test): $t = 2.390$ ($p < 0.01$; 86.9 degrees of freedom).^{76,77} A level of significance of 0.01 makes it possible to conclude that customers belonging to the second group were less profitable than customers belonging to the first group. Thus, it might perhaps be asserted that the higher a customer's credit risk, according to rating codes assigned by international credit rating agencies, the higher the relative customer profit. The statistic partial eta-squared, however, had a value of 0.045, suggesting that the size of the effect of creditworthiness on relative customer profits was rather small.⁷⁸ Thus, less than 5 per cent of the variation in customer profits can be

Table 6: Descriptive statistics for customer profits of the four credit rating groups ($n = 144$)

	Rating code	No. of customers	Arithmetic mean	Standard error	Skewness	Kurtosis
<i>Four profit quality groups</i>						
Low creditworthiness	1	20	0.612	2.044	-0.335	5.361
Medium low creditworthiness	2	62	0.026	0.627	1.308	8.681
Medium high creditworthiness	3	48	-3.441	1.703	-3.985	16.703
High creditworthiness	4	14	-4.600	2.984	-1.565	1.623
<i>Two profit quality groups</i>						
Low/medium low creditworthiness	1 and 2	82	0.169	0.681	0.345	8.273
Medium high/high creditworthiness	3 and 4	62	-3.703	1.470	-3.474	13.390
The mean of all groups	1, 2, 3 and 4	144	-1.498	0.756	-3.326	19.286

explained by variations in customer creditworthiness. Additionally, the differences in relative customer profits for the four credit risk classes were not significant. Consequently, the findings were not convincing.

DISCUSSION AND CONCLUSION

Targeting is an important strategic marketing tool for a business unit. Usually, the targeting process is based on market segments that have been identified by using various customer-based marketing metrics or characteristics (demography, geography, etc). A complimentary targeting process can be developed based on business unit-based marketing metrics such as customer profitability metrics and credit rating codes, as presented above. These two approaches to targeting processes are in accordance with the duality of the marketing concept and the definitions of marketing. Thus, an alternative definition of targeting could be 'the process of selecting the right target customers and market segments in order to obtain customer action loyalty as well as long-term, risk-adjusted customer profitability'.

The findings suggest that exporters received a small financial compensation for increased credit risk. This became apparent when the sample of 144 customers was divided into two groups, one consisting of customers with credit rating codes 1 or 2 and one consisting of customers with credit rating codes 3 or 4, where credit rating code 1

represents the lowest and 4 the highest creditworthiness. The first group consisted of 82 customers and the second of 62. The average relative customer profit for the first group was 0.17 per cent and was -3.70 per cent for the second. The difference regarding relative customer profits between the two groups was statistically significant at the 0.01 significance level. When the sample was divided into four groups based on customer creditworthiness (rating codes 1-4), no statistically significant differences were found between the groups (at the 0.05 significance level). Thus, the findings are not convincing. Additionally, the effect size was rather small, with a partial eta-squared of only 0.045, implying that less than 5 per cent of the variations in customer profits can be explained by variations in customers' creditworthiness.

Instead of looking for statistically significant differences, let us simply look at the differences as mathematical differences with respect to profitability among the four groups. The differences of the means between the groups as presented in Table 6 can be seen as estimates of the risk compensation the exporters receive because of increased credit risks. By accepting customers with a rating code of 3 instead of customers with a rating code of 4, the findings indicate an average increase of approximately 1.2 percentage points in relative customer profit. The findings indicate an even larger increase by accepting customers that were assigned a credit rating code of 2. By accepting customers assigned

a rating code of 1, the findings indicate that the relative customer profit was increased by approximately 5.2 percentage points compared to customers with a rating code of 4. The average order size for the entire sample of customers was about NOK 320,000. Based on the estimates above, the average order profit can be increased by about NOK 17,000 if the transactions are carried out with customers assigned to credit rating code 1 instead of the most solvent customers (rating code 4). The findings suggest that decision makers have a difficult trade-off to make between profitability and credit risk. They must decide whether they will aim for higher customer profitability despite the larger credit risk involved, or whether they would rather select more solvent customers even if this can be expected to result in lower customer profitability. Based on this line of thinking, exporters can select a portfolio of customers that reflect their attitude toward credit risk. Using this approach, every order or every customer can be regarded as a separate project in the company's total portfolio of customers. Different decision makers can have different opinions with respect to the compensation level for increased credit risks. This will depend on a number of aspects, such as the customer's financial situation, the exporter's financial situation and credit policy, the decision situation (eg if there are many alternative customers) and attitudes toward risk.^{79–81} It should, however, be remembered that these comments are based on the assumption that there are significant profitability differences among customers with respect to credit risks. In this case, the differences were not significant (at the 0.05 level) for the four groups. Thus, the findings suggest that decision makers should not rely on 'invisible forces or hands' in the various marketplaces if one of the company's goals is to obtain financial compensation for credit risks. The findings indicate that variations in customer profitability are so large within each of the credit rating groups that customer accounts should be worked out in order to help managers with respect to decision making.

As pointed out above, none of the four export companies had previously calculated customer

profitability accounts in a systematic way. Additionally, information with respect to customer creditworthiness was not available. With such information at hand, decision makers should be able to balance customer profitability and credit risks. It probably makes sense for the risk compensation to be different from what was found in this study. This is one of the many market strategic decisions that will have to be taken by a business unit's executives and marketing managers.

In addition to customer credit rating codes, a risk classification for different countries can also be included.^{82–84} An interesting research question can thus be whether or not there is a positive relationship between increased country credit risk and increased customer profitability. It may also be possible to determine the distribution of risk compensations with respect to customers and markets (countries), and the trade-off between profitability and credit risks can be further analysed using financial theories.^{85,86}

Even if the credit rating codes of customers have been established using objective criteria and are usually based on the judgments of three to five credit rating experts, the rating codes are clearly subjective. Therefore, it should not be surprising that the differences in the means of the relative customer profits differed when two neighbouring groups were compared according to creditworthiness (Table 6). There seems, however, to be a sharp division in customer profitability between customers classified as 2 and 3. This can have practical implications both for credit and export companies, particularly as the number of risk classes is generally higher than four.^{87,88}

The credit rating codes were furnished by international rating agencies that have cooperated for many years. Such a division of work is often favourable because of different insights and information regarding markets and customers. In this case, one of the companies was responsible for setting the final credit rating code. Even though efforts were made to 'fine-tune' the rating codes, minor differences between the agencies might be expected. This may at least partly explain the insufficient significance levels that

were reported above. Yet this should not be an excuse for failing to develop customer profitability accounts and considering customer creditworthiness.

When targeting customers with respect to profitability, decision makers need insight into the variables that are adjustable and that also have a strong influence on the financial success of the business unit. Credit risks form one such set of variables. Such risks are usually accepted when adequate risk premiums are offered. This suggests that marketers can accept increased credit risks when customers provide financial compensation for this increase. In order to obtain financial compensation for increased credit risks, however, the findings imply that marketers and managers need market-oriented profitability accounts for decision support. Additionally, in order to target profitable customers and manage them for profit, managers need an information system that provides the metrics necessary for decision making with respect to risk-adjusted customer profitability. At a minimum, this would involve using customer accounts (customer profitability analyses) and customer credit rating codes for each of the customers. This approach makes it possible for businesses to receive proper financial compensation for assuming customer credit risks.

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