

Do Customer Profitability Accounting and Analyses Provide Managers with new Decision Support?

Evidence from Norwegian Fish Exporters

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ABSTRACT

This paper has two purposes: (1) to study the relationships between subjective and objective (cost-based) measures of customer profitability, and (2) to study managers' collective cognitions of their customers' profitability. Empirical data have been collected from four Norwegian fish exporters: (1) managers' a priori subjective judgments of the profitability of customers, and (2) customer profitability accounts (not available earlier). This industry has a very high level of directly traceable costs (98.5 per cent) implying very low uncertainties in the measures of customer profitability. Associations between subjective and objective measures of customer profitability measures are weak both regarding absolute and relative customer results. Managers have common perceptions with respect to customer profitability, however, not in accordance with the customer profitability accounts (CPA). Neither education nor experience can compensate for insufficient or missing customer accounts that provide reliable profitability figures. Intuition may function best when "cornerstones" based on rational working methods are available for the decision makers. Thus, CPA provide managers with new decision support. The paper emphasizes practical implications regarding customer profitability accounting and management decisions.

Keywords: customer profitability; decision support; managerial cognition; objective performance measures; subjective (perceptual) performance measures

1 Introduction

Business performance and decision-making are closely related. A decision maker's perception of a decision problem or the framing of a decision is dependent on the information available and how the decision maker uses that information (Demski, 1997). The understanding of the decision situation is related to both the theoretical and the empirical insights of the decision makers involved (Coase, 1938). According to Kahneman (2011), managerial decisions are based on two systems: intuition (system one) or rational working methods (system two).

This paper addresses customers as profitability objects. Over the last three decades, textbooks, teaching cases and articles have given increased attention to customer profitability analyses (CPA) as important tools for improving decision making in organisations (Bjørnenak and Helgesen, 2013; Brierley, 2015; Cooper and Kaplan, 1991; Foster and Gupta, 1994; Helgesen et al., 2018; Horngren et al., 2012; Ryals, 2008; Storbacka, 1995; Weaver, 2010). Even though the use of CPA has been increasing, the levels of use differ (Guiding and McManus, 2002; Helgesen et al., 2019; Tanima and Bates, 2015). Case studies and surveys have shown that there seems to be insufficient decision support within this area for a number of firms (Abdel-Kader and Luther, 2006; Everaert et al., 2008; Guerreiro et al., 2008; Helgesen and Voldsund, 2009; Nordskar and Johansen, 2015). Some businesses have not established customer profitability accounts (CPA) at all, or the accounts are not updated.

However, businesspeople continue to make decisions concerning exchanges with customers. When making such decisions, they have some sort of concept of the decision situation regarding profitability. Thus "images of customer profitability" can be broadly divided into two main groups: subjective (perceptual) and objective (cost-based). The elaboration of cost-based or objective measures of customer profitability may be time-consuming and rather expensive. In view of the insight that decision makers have regarding their own businesses, is it necessary to work out customer profitability analyses and customer profitability accounts? Do businesspeople need cost-based customer profitability figures to support decision making when discussing terms with their customers?

This paper has two purposes. The main purpose is to study the relationships between subjective (perceptual) and objective (cost-based) measures of customer profitability. The research question addressed is: Do cost-based customer profitability figures provide managers with new information (on "hidden" profitability)? In the literature, the interchangeability of subjective and objective measures of performance has been discussed for years (Dess and Robinson, 1984; Richard et al., 2009; Wall et al., 2004). Most of the studies address the company or business level. Thus, the main contribution of this paper is the customer level, implying that an alternative research question may be formulated as follows: Can subjective and objective measures of customer profitability be used interchangeably? Finding support for this second research question implies, presumably, a negative answer to the first question.

An additional purpose of the paper is to study managers' collective cognitions of their customers' profitability. In the managerial cognition literature, a key question is the extent to which individuals within organisations have similar or different cognitions (Tyler and Gnyawali, 2009; Walsh, 1995). Managers' beliefs with respect to customers seem to be of greater importance than their cognitions regarding industry and competitors (Tyler and Gnyawali, 2009). Thus, the following research question is addressed: Do the company managers share common beliefs regarding the profitability of their customers?

This paper reports a study of associations between managers' a priori subjective judgments (perceptions) of customer profitability and cost-based or objective measures of customer profitability. The context is four Norwegian fish product exporting companies and their managers and customers. This industry was chosen because it has a very high level of directly traceable (attributable) costs (98.5 per cent). The lack of arbitrary allocations implies that there are very low uncertainties in the measures of profitability of customers. None of the four companies had established a managerial accounting system that included customer profitability accounts. Since the marketing and distribution costs are spread over a large number of different accounts, it is very difficult for managers to assign profitability to any single customer. This makes the industry suitable as a context, as is further addressed below.

The rest of the paper is organised as follows. The next section contains a very brief discussion of subjective and objective measures of business performance as well as aspects regarding managerial collective cognitions, after which the study design is presented. This includes a discussion of customer profitability accounts and managers' subjective judgments of individual customer profitability. Next the findings of the study are presented, followed by a discussion and a conclusion.

2 Literature

2.1 Subjective versus objective measures of business performance

Performance measurement in economic organisations was invented in the 1880s (Meyer, 1994). Businesses then, like now, were run for profit; however, careful calculation “did not exist during much of the nineteenth century” (Meyer, 1994, p 561). Business performance can be measured for various entities (industry, organisation, business unit, product, customer, etc.) and various measures may be used (Capon et al., 1990; Clark, 1999; Goshu and Kitaw, 2017; Sloma, 1980). Here the focus is on subjective versus objective measures of performance regarding the same profitability object (i.e. customers). Objective measures are direct measures of countable outcomes based on rational working methods, whereas subjective (perceptual) measures are based on respondents’ judgments (ratings) that are collected through surveys and interviews (Abdel-Maksoud et al., 2015; Demartini and Trucco, 2018; Singh et al., 2016). Thus, this study focuses on perceptual or subjective measures that replicate objective measures (quasi-objective measures).

A number of studies have addressed relationships between objective and subjective measures at the overall business level (Baer and Frese, 2003; Bommer et al., 1995; Dess and Robinson, 1984; Heneman, 1986; Kunz, 2015; McCracken et al., 2001; Powell, 1992; Robinson and Pearce, 1988; Venkatraman and Ramanujam, 1987; Vij and Bedi, 2016; Wall et al., 2004). Two of these studies (Bommer et al., 1995; Heneman, 1986) address meta-analyses, while the remaining nine articles publish findings from surveys. Managers of a number of businesses were asked to report objective data with respect to some performance indicators such as return on sales (ROS), return of assets (ROA), return on investment (ROI), and total sales growth over the last few years (SG), and at the same time give subjective judgments with respect to these performance indicators. Regarding the ten studies, the correlation coefficients differ somewhat, however, most of the coefficients are found in the interval 0.45-0.70 ($p \leq 0.001$ for most of the coefficients). The findings indicate that the objective and subjective measures are statistically significantly related. Even if the conclusions are ambiguous, “subjective measures of company performance are widely used in research and typically are interpreted as equivalent to objective measures” (Wall et al., 2004, p 95).

In the brief discussion above, the focus has been on business performance. Below the focus is on the customer level, that is on subjective and objective measures of customer profitability.

2.2 Managerial collective cognitions

In the managerial cognition perspective, managers are information workers (McCall and Kaplan, 1985) implying that time is spent on absorbing, processing and disseminating information about issues, opportunities and problems. Owing to the fact that the flow of information is comprehensive, “managers meet this information challenge by employing knowledge structures to represent their information worlds and thus, facilitate information processing and decision making” (Walsh, 1995, p 281).

A manager’s organised knowledge or cognitive structure regarding an information domain helps the manager to acquire, retain and process information on that domain (Axelrod, 1976). Walsh (1995) suggests that just like an individual knowledge structure, a shared knowledge structure of a manager group works as a collective foundation for the group’s actions. Collective knowledge structures have been referred to as collective cognition (Langfield-Smith, 1992) or collective cognitive maps (Axelrod, 1976). Such “pictorial representations” are looked upon as useful for summarising and communicating information about the maps that managers use when making decisions (Huff, 1990).

A key question in the managerial cognition literature is the extent to which individuals within organisations have similar or different cognitions. Empirical studies have focused on cognition of industry and competition (Reger and Palmer, 1996; Tyler and Gnyawali, 2009). However, Tyler and Gnyawali (2009) suggest that their findings reveal that customer rather than competitor beliefs seem to be the most important commonly shared beliefs in companies. The second purpose of this study is to study managers’ common beliefs regarding customer profitability.

3 Study design

3.1 Context and data

Norwegian exporters of frozen fish and salted and dried cod (“klipfish”) were selected as the context for the study. This sector of the Norwegian fishing industry is characterised by almost worldwide export activities

oriented towards various product markets (geographical areas), and each of the markets features many actors on both the buyer's and the seller's side. Usually, the importers buy products from several exporters that are often located in different countries. Repurchases often form a crucial part of the fish products trade.

The empirical data have been collected from four Norwegian exporters and their managers. All the managers are in upper management positions (managing director, financial director, marketing director, sales director, etc.). It should be underscored that they have hands-on management regarding decision making. This is further addressed below.

Information has been collected from two sources: managers' a priori subjective judgments (perceptions) of the profitability of some customers, and customer profitability accounting and profitability analyses based on accounting information from the four exporting companies. Even though the surveys regarding managers' a priori subjective judgments were carried out prior to the exploration of the customer profitability accounts, it makes sense to discuss these accounts first.

3.2 Customer profitability accounting and customer profitability analysis

A number of aspects must be considered when establishing reliable profitability figures for customer accounts. For example, cost-based estimates of customer profitability figures can be established by using different estimation methods: full costing, variable costing, activity-based costing (ABC) or time-driven activity-based costing (TABC) (Atkinson et al., 2012). These methods will of course 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. Here, an ABC approach is used. According to the ABC procedure, the indirect costs are allocated to various cost hierarchy related objects in proportion to the use of different activities (Kaplan and Anderson, 2007).

This paper uses a market-oriented hierarchy consisting of four levels: order, customer, market and business unit. Costs are assigned to the level where they are incurred (orders, customers, markets, etc.). All revenues are related to the order level. The costs of the orders are subtracted from the revenues from orders. In this way the order result can be estimated for each order. Then revenues and costs 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 revenues and costs from the customers are used on the market level and next at the business level. The context selected simplifies the assignment of costs because the product costs of the exporting companies are easily determined from the invoices received from the producers, and all other exporter costs are different marketing costs. In order to calculate profitability reports, all the accounts and all the vouchers had to be thoroughly examined. In this way about 98.5 per cent of the total costs were traced and assigned directly to the cost objects of the various levels of the market hierarchy. Thus, only 1.5 per cent of the costs had to be accumulated into cost pools (indirect costs) and allocated to the various cost objects, a much lower proportion than previously thought.

Table 1.

Customer profitability accounts: arithmetic means of absolute and relative figures as well as standard deviations (n=105)

	Mean Abs. fig. (NOK)	Mean Rel. fig. (%)	SD Abs. fig. (NOK)	SD Rel. fig. (%)
Customer income (customer revenue) (CI)	1 433 920	100.00	1 698 110	-
- Customer income (revenue) reductions	680	0.05	2 610	0.19
= Net customer income (revenue)	1 433 240	99.95	1 697 950	0.19
- Direct customer product costs	1 299 950	90.65	1 564 920	4.62
= Customer product margin (CPM)	133 290	9.30	153 610	4.58
- Direct order-related marketing costs	95 400	6.65	119 120	2.90
- Direct customer-related marketing costs	510	0.04	1 340	0.08
= Customer operating margin (COM)	37 380	2.61	64 770	3.59
- Direct customer-related capital costs	11 200	0.78	21 580	0.96
= Customer margin (CM)	26 180	1.83	54 320	3.32
- Indirect order-related costs	11 140	0.78	16 210	1.28
- Indirect customer-related costs	2 260	0.16	2 520	0.62
= Customer result (CR)	12 780	0.89	50 970	3.29

Table 1 shows the layout of the customer account report, including the main items (cost groups), the arithmetic means of the absolute and the relative figures of the customer accounts as well as standard deviations ($n=105$). It should be mentioned that NOK is the commonly used abbreviation for the Norwegian currency. In this industry, items resulting in a reduction in sales revenues (quantity discounts, bonuses, etc.) are quite moderate. Table 1 shows that the direct product costs are the most important, representing on average about 90.6 per cent of customer revenues. These costs consist of purchasing and packaging costs, internal freight expenditures and brokers' commissions. Direct marketing costs related to orders and customers represent about 6.7 per cent of customer revenues. These costs comprise sales and distribution costs (outward freight, transport assurances and agent commissions), post-sale service costs (support, etc.), customer handling and recruitment (travel, representation, etc.), and other marketing costs (charges related to exportation, duties, taxes, etc.). Direct customer-related capital costs represent about 0.8 per cent and include discounting costs, capital costs, bank costs, among others. Calculated costs must be considered in addition to current costs based on real credit time. The remaining costs may be treated as indirect costs (fixed costs that are divisible) and allocated to different levels of the market hierarchy by way of ABC. Indirect costs related to orders and customers represent about 0.9 per cent of customer revenues. Thus, on average these customers are only marginally profitable. (The direct and indirect costs related to the market level and the business level of the market hierarchy represent only about 0.4 per cent of the total costs.)

The rearrangement of the accounting figures was worked out in close collaboration with the exporting companies' marketers, accountants and managers. There was uniform agreement regarding the results. The sample, representing about 3.3 per cent of the total Norwegian exports of products from these kinds of businesses has been analysed at the market level by comparing the four exporters' market-revenue figures with the total Norwegian export during the period under consideration for comparable business dealings, that is to 28 geographical markets. The analysis shows a strong and significant correlation ($r=0.80$; $p<0.001$). In addition, approximately 20 of the most important geographical markets for this sector of the Norwegian fishing industry are represented in the sample.

3.3 Managers' subjective judgments of individual customer profitability

Customer profitability analyses were carried out in exporting companies that previously did not have this kind of financial information available. At the very beginning of the research process, the managers in each of the four exporting companies were told briefly about the research project and the principal aim of establishing a market-oriented management accounting system that would include customer accounts and customer profitability figures. They were also asked to participate in the research process and provide the information necessary for the elaboration of customer accounts and informed about how the customer accounts could be worked out, cf. the discussion above. There was a general agreement that the customer accounts should be based on a kind of "full-cost"-approach. In addition, all traceable costs should be identified and handled in accordance with the selected market-oriented management accounting framework.

Even if customer profitability accounts were not available, the managers of the exporting companies obviously had some ideas or beliefs regarding the profitability of individual customers. Therefore, surveys regarding managers' subjective judgments of the profitability of individual customers were conducted shortly after the managers decided to participate in the research process. Managers were asked to judge (estimate) the absolute and relative profitability levels regarding some of their company's customers - at least 20 customers. The questionnaires were based on five-point Likert scales. For each selected customer, the managers had five response alternatives from "slightly profitable" to "very profitable" both with respect to absolute and relative customer profitability figures (customer results). In the questionnaires, the managers were told that the distances from one response alternative to the preceding and the following responses should be looked upon as being equal. In addition, the debtors' account numbers, along with the customer revenues from the period of study were included at the first page of the questionnaires. Thus, there was no doubt regarding the time period considered for the customer profitability analyses. The managers had one day to answer the questionnaire, (i.e. on one of the first days of the data gathering process). Managers were allowed to use all available information when answering the questionnaires. However, they were asked to work individually. There is good reason to believe that this request was honoured by all respondents.

4 Findings

The findings are addressed as follows. Firstly, descriptive statistics are addressed. Next, managers’ subjective judgments of customer profitability as measured in absolute accounting figures are compared with corresponding figures taken from the calculated customer profitability accounts. Then, analogous comparisons are made for the relative figures of customer profitability. Next, managers’ education and experience are briefly addressed, and lastly managers’ cognitions are examined.

4.1 Descriptive statistics

Table 1 presents descriptive statistics of the customer profitability accounts cf. the discussion above. Table 2 presents descriptive statistics of the responses (subjective judgements) of the fifteen managers of the four exporting companies. Five managers responded from one of the companies, four from two of them, and two from the fourth exporting company. Frequently they took decisions concerning customer transactions. The number of observations (cases) is recorded in an interval from 21 to 31 customers, making a total of 105 customers. The response alternative “slightly profitable” has been assigned “1”, and the response alternative “very profitable” has been assigned “5”. Table 2 shows the arithmetic means as well as the standard deviations both for the absolute and the relative subjective measures of customer profitability. All the fifteen managers answered the first part of the questionnaire regarding absolute customer profitability. One respondent did not answer the question about relative figures, meaning that fourteen managers answered this part of the questionnaire.

Table 2.

Managers’ subjective judgements (perceptions) of absolute and relative customer profitability figures – arithmetic means and standard deviations – as well as associations between managers’ subjective judgements (perceptions) and estimated figures taken from customer profitability accounts (Pearson’s correlation coefficients)

Resp.	No. of cases	Absolute figures (NOK)			Relative figures (%)		
		Arithmetic mean	Standard deviation	Pearson’s cor. coef.	Arithmetic mean	Standard deviation	Pearson’s cor. coef.
1	22	2.73	0.83	0.49*	2.45	0.91	0.04
2	22	3.05	1.13	0.32	3.09	0.87	0.07
3	22	2.45	1.10	0.76***	2.64	0.95	0.05
4	22	3.41	1.01	0.41	3.23	0.97	-0.02
5	22	2.68	1.00	0.48*	2.64	1.14	0.17
6	22	3.50	0.74	0.31	2.77	1.19	-0.06
7	22	3.14	0.77	0.13	3.18	0.80	0.34
8	22	3.27	0.77	0.11	3.41	0.80	0.31
9	21	3.19	0.40	0.40	3.38	0.59	-0.07
10	30	2.80	0.76	-0.01	-	-	-
11	30	3.13	0.73	0.33	2.87	0.63	-0.19
12	30	3.13	0.35	0.36	3.37	0.56	0.40*
13	31	3.23	0.76	0.10	2.55	1.06	0.15
14	31	3.16	0.74	0.17	3.10	0.83	0.43*
15	31	3.10	1.01	0.06	3.19	0.83	0.20

*** 0.001 level (two-sided)

** 0.01 level (two-sided)

* 0.05 level (two-sided)

4.2 Subjective judgments of customer profitability – cost-based measures: absolute figures

Here the focus is on absolute customer results. A simple measure of association (Pearson’s correlation coefficient) has been used in studying the correspondence between the managers’ subjective judgments of customer profitability and the objective (cost-based) estimates of customer profitability that have been calculated. Table 2 column no. five presents Pearson’s correlation coefficients inclusive significance levels.

When studying relationships using correlation coefficients, both significance levels and effect sizes are important to consider. Regarding the strength of the relationship between two variables, Cohen (1988) suggests the following guidelines: $r=0.10$ to 0.29 , small; $r=0.30$ to 0.49 , medium; and $r=0.50$ to 1.00 , large. The effect sizes (correlation coefficients squared) give the shared variance (the “overlap”) between the two variables.

The coefficients representing the absolute figures vary from -0.01 to 0.76, one is negative and fourteen are positive. Only three coefficients are significant at the 0.05-level. For two of them, the coefficients are a little less than 0.50 while the coefficient for the third one is 0.76. This is further discussed below.

4.3 Subjective judgments of customer profitability – cost-based measures: relative figures

Here the focus is on relative customer results. Table 2 column no. eight presents Pearson’s correlation coefficients inclusive significance levels. Of the fourteen coefficients of associations, ten are positive and four are negative, varying from about -0.19 to about +0.43. Only two of the fourteen coefficients are significant (p<0.05). Many of the coefficients are close to zero (0.0) and their levels of significance are unsatisfactory.

4.4 Managers’ education and experience

The survey asked the managers to state the number of years of education they had completed beyond compulsory schooling, as well as the number of years of work experience, experience in the business, and experience that may be classified as relevant for their current work. Table 3 presents the main findings. The purpose was to see if dissimilarities concerning these four factors have any influence on the results of the statistical analyses regarding customer profitability. All fifteen managers answered this part of the survey. On average the managers had about seven years of education beyond compulsory schooling. The variation is not high, and it may be asserted that the managers have a solid educational background. On average the managers’ experiences also are solid, however the variances are greater compared with education beyond compulsory schooling.

Table 3.
Number of years with respect to managers’ education and experience (n=15)

	Lowest	Highest	Mean	SD
Education beyond compulsory schooling	5	9	6.7	1.8
Work experience	2	43	17.0	9.5
Experience in the business	1	40	12.1	9.2
Relevant experience for current work	2	40	13.7	8.7

For each of the four variables the sample was divided into two subgroups by using the medians as the grouping variable. T-tests were used to analyse variations in managers’ education, work experience, other experience, and their judgments of the profitability of customers. The statistical analyses do not disclose differences that are statistically conclusive at the 0.05-level for any of the variables considered. Thus, neither education nor experience seem to influence the managers’ judgments regarding the profitability of customers.

4.5 Managerial cognitions

An additional purpose of this study is to analyse relationships among managers regarding their cognitions of customer profitability. Table 4 shows as an example the coefficients of association concerning relative customer results related to the respondents of one of the exporting companies. All the five managers answered the questionnaire.

Table 4.
Relative customer profitability: associations (Pearson’s correlation coefficient) concerning the subjective judgements (perceptions) of the managers of one of the fish exporting companies (n=22)

Pearson’s corr. coef.	Manager A	Manager B	Manager C	Manager D	Manager E
Manager A	-				
Manager B	0,61 **	-			
Manager C	0,64 ***	0,56 **	-		
Manager D	0,79 ***	0,71 ***	0,66 ***	-	
Manager E	0,44 *	0,52 *	0,71 ***	0,60 **	-

* 0.05 level (two-sided); ** 0.01 level (two-sided); *** 0.001 level (two-sided)

The average measure of association for this company concerning relative customer results of all the five respondents is about 0.07: that is the average coefficient of correlation between subjective and cost-based measures of profitability (Table 2). Comparing this figure with the coefficients in Table 4, shows that all the ten coefficients of association are much higher than this average number. Additionally, all the ten coefficients are significant at the 0.05-level, eight at the 0.01-level and six at the 0.001-level. This indicates that the managers of

this exporting company have common beliefs regarding the profitability of their customers. This may be analysed further for all four companies and for both measures.

Table 5.
Combined judgements of the managers of each of the four exporting companies

	Number of respondents	Kendall's W coefficient
<u>Absolute customer profitability:</u>		
Company A	5	0,38*
Company B	2	0,62
Company C	4	0,34
Company D	4	0,52**
<u>Relative customer profitability:</u>		
Company A	5	0,65**
Company B	1	-
Company C	4	0,41**
Company D	4	0,78**

* 0.05 level (two-sided); ** 0.01 level (two-sided); *** 0.001 level (two-sided)

Kendall's W ("Kendall's coefficient of concordance") shows the degree of agreement between "various judges of the same object". The level of the coefficient is between 0 and 1. The higher the agreement, the closer the value of the coefficient is to 1. Table 5 presents the degree of correspondence and the strength of the relationships (their levels of significance) for each of the four companies. The first column shows the measures of analysis (variables) and the company. The next column shows the number of respondents ("judges") for each of the analyses. The third column presents Kendall's W statistics, including levels of significance. Kendall's W statistic has been calculated for seven variables, with values varying from 0.34 to 0.78. Four of the seven coefficients are significant at the 0.01-level and five at the 0.05-level. The level of Kendall's W statistic of the two non-significant coefficients is also high.

Common beliefs seem to have been formed regarding customer profitability among the managers of each of the four fish exporting companies. However, these collective cognitions are not in accordance with the estimated figures of customer profitability that were established by doing a thorough calculation of the four company's accounting figures.

5 Discussion

This paper has two purposes: (1) to study the relationships between subjective and objective (cost-based) measures of customer profitability, and (2) to study managers' collective cognitions of their customers' profitability. The main purpose is to study the relationships between subjective (perceptual) and objective (cost-based) measures of customer profitability. The research questions addressed are: Do cost-based customer profitability figures provide managers with new information on "hidden" profitability? Can subjective and objective measures of customer profitability be used interchangeably?

The calculated associations between the subjective and objective measures of the managers are very low, both regarding absolute and relative measures of customer profitability (customer results). For absolute figures one of 15 Pearson's correlation coefficients is significant at the 0.001-level and only three coefficients are significant at the 0.05-level. Two of these coefficients are a little less than 0.50 while the third is 0.76. For this manager the effect size or "overlap" (correlation coefficient squared) is about 58 per cent. For the two other managers the effect sizes are a little less than 25 per cent. For the remaining 12 managers the effect sizes are lower than 17 per cent. For relative figures only two of 14 coefficients are significant at the 0.05-level. The coefficients are 0.40 and 0.43, implying that the effect sizes are a little less than 20 per cent. For the remaining 12 managers effect sizes are lower than 11 per cent. The findings indicate weak associations between subjective and objective measures of customer profitability both regarding absolute and relative customer results. Thus, the first research question may be answered affirmatively, meaning that cost-based customer profitability analysis seems to provide new information to managers on "hidden" profitability. It should be underscored once more that the calculation of the customer profitability accounts was worked out in close collaboration with the exporting companies' marketers, accountants and managers. There was no disagreement with respect to the findings.

Thus, customer profitability accounting and analysis should be included as a part of the decision support system of a business unit. However, regarding food industries and decision support systems, a number of aspects and dimensions may be included (see e.g., Asioli et al., 2011; Guenther-Lübbers et al., 2013; Olafsdottir and Sverdrup, 2019; Patel and Bhatt, 2014; Thakur and Gunnlaugsson, 2018; Weaver, 2010; Weaver and Moon, 2018).

With respect to the second research question, whether subjective and objective measures of customer profitability can be used interchangeably, the answer seems to be in the negative.

This answer depends on shared variance requirements of the two measures. In order to obtain a shared variance of 0.50, the correlation coefficient has to be about 0.71. Perhaps the correlation coefficient should be even higher to claim interchangeability?

However, does it matter if managers at these firms misjudge which of their customers are more or less profitable? The answer is yes. Table 1 presents the arithmetic mean of the customer accounts as well as measures of the dispersion (standard deviations). Since the relative customer result on average is rather low because of the competitive nature of the industry and the dispersion is rather high, insight into customer profitability is very important. This is easily seen when profitability figures are presented as ordered distributions. Such analyses may be based on absolute or relative profitability figures.

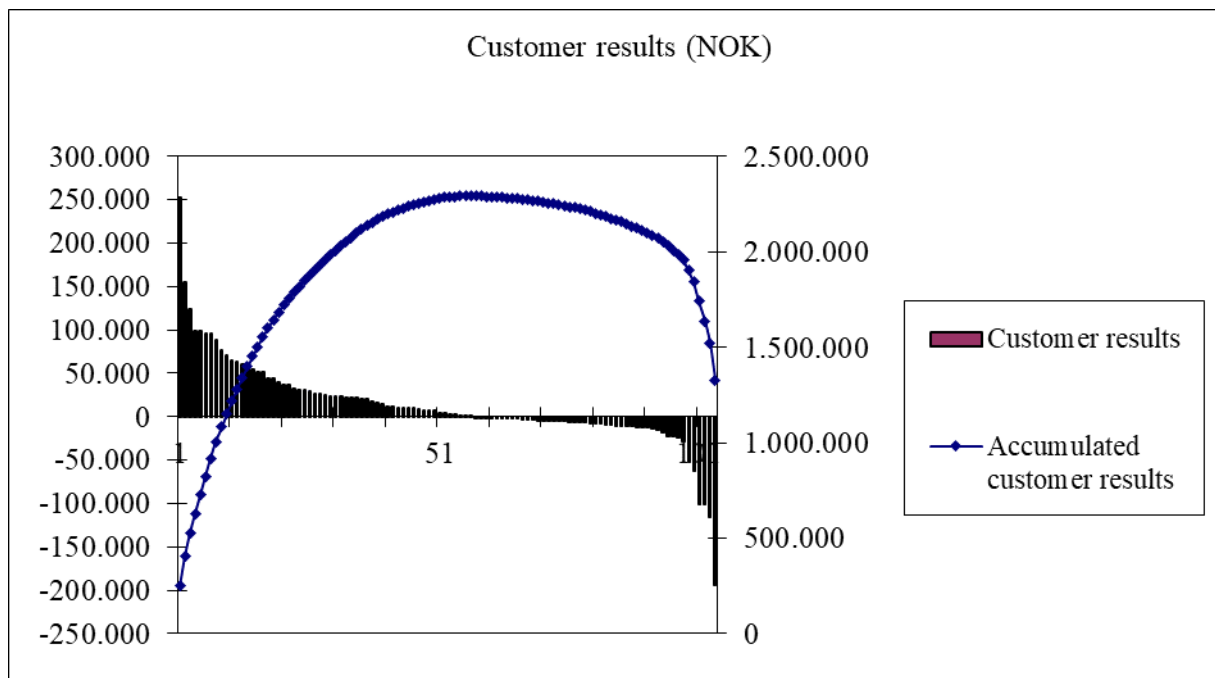


Figure 1. Customer results in NOK (absolute figures) ranked descending – per customer and accumulated (n=105)

Figure 1 presents customer results (CR) in absolute figures per customer (the left axis) and accumulated (the right axis) for the whole sample. The customers have been ranked according to absolute customer results obtained during the period of analysis, so that the customer contributing most to the total customer result is listed first, then the second most profitable customer and so on. The customer that is ranked last represents the lowest customer result obtained, in this case a considerable loss. Figure 1 shows that the absolute customer result was about NOK 2.3 mill. but diminished to about NOK 1.3 mill. The absolute customer result was positive for 57 of the customers and negative for the remaining 48 customers.

Figure 2 presents the Stobachoff-curve (Storbacka, 1995). The vertical axis shows the accumulated customer result as a proportion of the total customer result for the selected period. On the horizontal axis the customers are ordered according to their relative profitability (customer profit as a proportion of customer revenue), with the most profitable customer first, the second most profitable customer next and the customer result of this customer added to the customer result of the first customer.

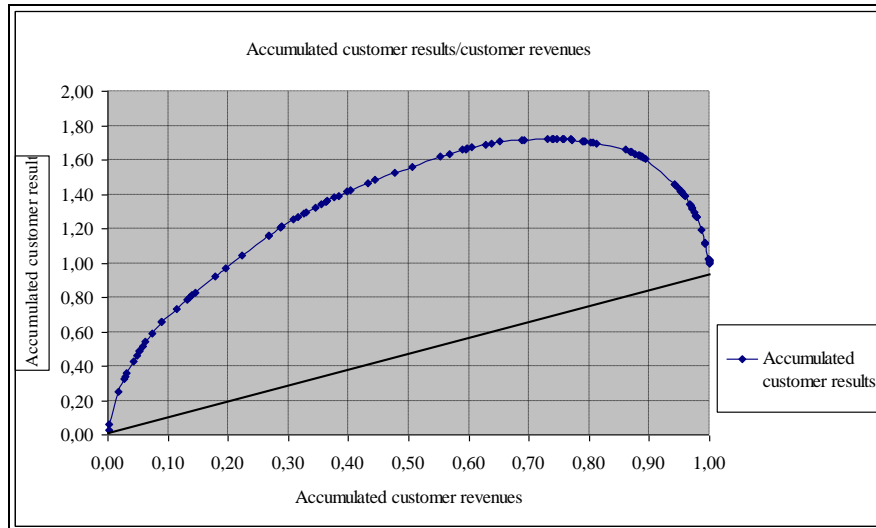


Figure 2. The Stobachoff-curve for the customer sample (n=105)

As long as the analysis is based on proportions, the ending point of the curve has to be 1.1. The findings can be summed up in this way:

- About 100 per cent of the customer results originated with approximately 21 per cent of the customer revenues.
- About 74 per cent of the customer revenues resulted in about 172 per cent of the customer results (“summit”).
- About 26 per cent of the customer revenues resulted in negative earnings and diminished the accumulated customer result from about 172 per cent to 100 per cent (i.e. a reduction of about NOK 1.0 mill).

Similar distributions are found in other studies (e.g., Bjørnenak and Helgesen, 2013; Cooper and Kaplan, 1991; Horngren et al., 2012; Matsuoka, 2020; Nordskar and Johansen, 2015; Storbacka, 1995; Tellnes and Mortensen, 2013; van Raaij, 2005).

Based on the findings above, one immediate strategic marketing decision could be to eliminate the unprofitable customers and concentrate activities on the most profitable. However, such immediate conclusions are not in accordance with the marketing concept that focuses on long-term profitability. Consequently, decisions should be based on customer accounts for more than one time-period.

An additional purpose of the paper is to study managers’ collective cognitions of their customers’ profitability. Thus, the following research question is addressed: Do the company managers share common beliefs regarding the profitability of their customers? Table 5 shows that the managers are very much in accordance with respect to their judgements of their customers. The conclusion is the same for absolute customer results as for relative customer results. Thus, the statistical analyses indicate that the managers of the four exporting companies have common perceptions or “collective cognitive maps” (Axelrod, 1976; Johnson et al., 2014; Langfield-Smith, 1992) with respect to customer profitability. Such common perceptions can be advantageous, but only if those perceptions are correct.

It should be noted that the subjective measures may comprise factors and aspects or relationships that are not included in the objective counterparts. The perceptions of the managers may unconsciously be based on a different time horizon, such as a period other than the previous year. The managers may also factor in possibilities related to transactions in the future. Probably, management decision is likely to be more effective through synergy of objective and subjective approaches and measures when updated customer profitability accounts are available and shared among the decision makers. Such reports will function as “cornerstones” based on rational working methods and probably result in subjective adjustments based on the objective performance measures (Du et al., 2018; Woods, 2012).

The context for this study is four Norwegian fish exporting companies. This industry was chosen because of its high level of directly traceable (attributable) costs. While the survey samples are satisfactory and the findings convincing, similar studies should still be carried out, preferably over a considerable period of time. Other contexts should also be examined.

6 Conclusion

A number of studies have analysed the relationships between subjective and objective measures of performance at the business level. Even though significant associations have been found between the variables (the measures), the conclusions are ambiguous. This paper addresses associations between objective and subjective measures of customer profitability. The context is four exporting companies where customer profitability accounts were not available. The findings indicate weak associations between subjective and objective measures of customer profitability both regarding absolute and relative customer results. There is reason to believe that customer-related problems are so complex that there is a need for profound insight when judging financial measures of customer profitability. It is not easy to judge the profitability of a customer when the estimate is based on the profitability of many orders and cost figures from many accounts. The findings indicate that neither education nor experience ("rules of thumbs") can compensate for insufficient or missing customer accounts that provide reliable profitability figures. According to Kahneman (2011), managerial decisions may be based on two systems, that is intuition (system one) or rational working methods (system two). Perhaps intuition functions best when "cornerstones" based on rational working methods are available for the decision makers. In order to use subjective measures when judging various profitability objects, it appears to be of fundamental importance that decision makers are well informed concerning the cost-based profitability of the objects under consideration. Thus, customer profitability accounting should probably be included as a part of the management accounting system for a business unit. The findings of this study are convincing in answering the research question : Do customer profitability analyses provide managers with new information? The answer is yes.

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