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**Customer Portfolios in Customer Asset Management
- Empirical Comparison of Customer Asset Portfolio Models**

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Abstract

The need to link marketing and firm performance has increased considerably during the past years. It has been proposed that customer asset management could act as this link, but the majority of the customer asset management frameworks based on customer lifetime calculations have not yet been adopted by the practitioners. This paper proposes that customer asset portfolios could provide alternative customer asset management frameworks, and explores the different portfolio models found from the customer asset management, IMP Group, and segmentation literature. The paper proposes that in order to provide foundation for improving firm performance, customer asset portfolio models should have a link to the shareholder value contribution, measured by economic profit generated by the customer relationships. The results of the study suggest that customer asset portfolio models can be applied in practice and that the optimal customer asset portfolio models should take into account the relative economic profitability, absolute business volume and the estimated future outlook of the customer relationships.

Key words: customer asset management, customer portfolios, segmentation, firm performance

Introduction

During the last years, the importance of customer asset management or customer equity management has been widely acknowledged in marketing literature (e.g. Gupta and Lehmann, 2003; Hogan, Lemon and Rust, 2002; Kumar, Lemon and Parasuraman, 2006; Rust, Lemon and Zeithaml, 2004), and it has been suggested that customer asset management could be the link between firm performance and marketing (e.g. Berger et al. 2006; Gupta, Lehmann and Stuart, 2004; Stahl, Matzler and Hinterhuber, 2003). Echoing this emphasis, for example the Marketing Science Institute has listed ‘impact of customer equity on firm value’ as one of their primary research priorities for 2006-2008.

Yet, the majority of the proposed customer asset management frameworks remain as conceptual ones, not tested empirically. One reason for the lack of empirical research might be that many customer asset management studies are based on the mathematical optimization of the customer lifetime value of all customers in the customer base, leading to extensive calculations (e.g. Blattberg and Deighton, 1996; Hogan et al., 2002; Pfeifer, Haskins and Conroy, 2005; Ryals & Knox, 2005). Only few researchers (Dhar and Glazer, 2003; Johnson and Selnes, 2004) have investigated the use of customer portfolios as an intermediate use of analysis, even though customer portfolios could lessen the calculation and estimation burden often associated to customer asset management models.

There is a body of research on customer portfolios conducted in the IMP Group (e.g. Campbell and Cunningham, 1983; Fiocca, 1982; Zolkiewski and Turnbull, 2000, Zolkiewski and Turnbull, 2002) and on customer segmentation (e.g. Dibb and Simkin, 2001; Dickson and Ginter, 1987; Piercy and Morgan, 1993; Sausen, Tomczak and Herrmann, 2005; Wind, 1978). However, these lines of research have mostly been conducted separately from customer asset management literature. Understanding the relationship between segmentation and customer portfolio models, as well as their differences, could considerably enrich the current customer portfolio research.

The purpose of the study can be divided into three parts: 1) discuss the similarities and differences between customer portfolio models in IMP literature, customer portfolio models in customer asset management literature and segmentation models, 2) create alternative customer asset portfolio models with different levels of complexity, aimed at providing a foundation for increasing firm performance, and 3) empirically test the created customer asset portfolio models and explore their differences.

Customer asset management - maximizing the return from customer relationships

Customer asset management can be defined as the optimized use of a firm's tangible and intangible assets in order to facilitate as profitable current and future customer relationships as possible (Hogan, Lemon and Rust, 2002). Even though the majority of the researchers seem to concur with a definition along similar lines, customer asset management is no cohesive school of thought. On the contrary, the very definition of the customer asset varies from one researcher to another. Blattberg and Deighton (1996) define customer asset as the sum of all discounted profits from all customers of the company. Hogan, Lemon and Rust (2002) expand the definition made by Blattberg and Deighton (1996) by stating that a company's customer asset is derivative of both the existing and potential customer assets. Both of these example definitions see that the customer asset is a figure, the amount of money that can be made from the current and prospective customer relationships. In this study it is proposed, however, that the customer asset is defined as the customer relationships the company has and will have with its customers. The relationship is a fruitful unit of analysis compared to a financial figure: by managing the relationship the financial outcome of the relationship can be affected.

The customer asset management literature can be divided into at least to two schools with different underpinnings and aspirations: the marketing efficiency school and the finance-marketing interface school. The marketing efficiency school (e.g. Blattberg and Deighton, 1996; Hansotia, 2004; Rust, Lemon and Zeithaml, 2004; Thomas, Reinartz and Kumar, 2004) are mainly interested in optimizing the use of various marketing instruments to influence customers' perceptions and thus behaviour, which ultimately leads to increased customer profitability in the long run. Often these studies discuss finding the right balance between the customer acquisition and customer retention investments. The marketing-finance interface school (e.g. Dhar and Glazer, 2003; Hogan et al., 2002; Ryals and Knox, 2005; Selden and Colvin, 2003; Venkatesan and Kumar, 2004) takes a different view on customer asset management than the marketing efficiency school, as it does not limit customer asset management activities to customer acquisition and retention – the value of an existing customer relationship can also be increased through e.g. cross and up-sales, reduced customer relationship management costs and reduced capital employed.

Regardless of the school of thought, the core of customer asset management is directing the right customer asset management activities to the right customers in order to maximise the return from customer relationships. Fundamentally, there are two ways of directing customer asset management activities: mathematical optimization approach and customer asset portfolio approach. The mathematical optimization approach starts by calculating the lifetime value for all customers in the customer base (customer lifetime value, CLV). Based on this information, the available customer asset management activities are directed to customers in such way that the CLV for each customer

is maximized (e.g. Blattberg and Deighton, 1996; Bolton, Lemon and Verhoef, 2004; Gupta, Lehmann and Stuart, 2004; Hogan et al., 2002; Pfeifer, Haskins and Conroy, 2005; Ryals & Knox, 2005; Stahl, Matzler and Hinterhuber, 2003). On the other hand, in the customer asset portfolio approach the customers are divided into portfolios based on their characteristics and the customer asset management activities are directed to the entire portfolios at the same time, thus simplifying the needed calculations to some extent (Dhar and Glazer, 2003; Johnson and Selnes, 2004).

Customer portfolios in different research traditions – foundations and uses

The most influential works on portfolio management come from the domains of finance. Modern portfolio theory (Markowitz, 1952; Sharpe, 1964) and the capital asset pricing model (Litner 1965a, 1965b; Sharpe, 1964) have been created to assess the risk and return of financial instruments. These theories discuss the optimal allocation of investment asset portfolio and suggest that investors aim to maximize returns for a given risk level and that a required return can be calculated to all risk levels. Already in the early 1970's the portfolio thinking was adopted to the literature and practice of general management. The first managerial applications of modern portfolio theory are the product and business portfolios. In their article, Wind and Mahajan (1981) provide an overview of nine business and product portfolio frameworks that had gained acceptance either in the academia or among the practitioners. These portfolio frameworks can be classified into three groups: product-based matrices (BCG growth/share matrix, McKinsey/GE business assessment array, business profile matrix and discretionary policy matrix), statistic-based models (conjoint analysis based approach & analytic hierarchy process) and finance-based models (risk/return model, stochastic dominance approach).

All customer asset management literature is based on the notion that the value capture from customer relationships to the provider varies from customer to customer and that this value can be actively managed. All customer asset management researchers also agree on the fact that the future cash flows from the customers are always uncertain; there is an innate risk concerning the future returns on customers. This idea of future revenues from multiple assets that are subject to risk creates a logical link to the modern portfolio theory and capital asset pricing model. Some researchers have also approached the customer asset management from portfolio perspective. Dhar and Glazer (2003) propose that customer relationships of a company should be managed as an investment portfolio and that both the individual customer relationships and customer segments should be analyzed based on their level of return and risk – analogously to investment instruments. By balancing customer relationships and segments the company seeks to maximize its overall return without exceeding firm's tolerance for risk. Johnson and Selnes (2004) take slightly broader view on customer portfolios: they argue that the customer asset management frameworks must take into account the accumulated effect that the number of customers has on economies of scales and the resultant cost structure of competing firms.

Another body of research on relationship portfolios can be found from the domains of Industrial Marketing and Purchasing Group (IMP Group). Several researchers have presented customer portfolios (e.g. Campbell and Cunningham, 1983; Dubinsky and Ingram, 1984; Fiocca, 1982; Zolkiewski and Turnbull, 2000; Zolkiewski and Turnbull, 2002; Yorke and Droussiotis, 1994) while others have focused on supplier portfolios (e.g. Krapfel, Salmond and Spekman, 1991). Also the customer portfolios presented by the researchers associated to the IMP Group are descendants

of modern portfolio theory (Markowitz, 1952). Due to the same origins, fruitful insights could be derived by facilitating a dialogue between customer asset management and IMP Group scholars. Also the existing relationship portfolio models created by IMP Group researchers focus mainly on the conceptual development of portfolio models: very few of the relationship portfolio models have been tested empirically; the study by Yorke and Droussiotis (1994) being one of the exceptions.

Extensive literature also exists on the subject of segmentation (e.g. Dibb and Simkin, 2001; Dickson and Ginter, 1987; Piercy and Morgan, 1993; Sausen, Tomczak and Herrmann, 2005; Wind, 1978). At first, both segmentation models and customer portfolio models seem to be almost synonyms: both approaches aim at dividing a customer base into smaller and informative sections in order to facilitate better decision-making and resource allocation. However, the theoretical foundations of the approaches are quite different. Segmentation has its roots in cluster analysis. The goal of the majority of cluster analysis procedures is find groups which are both internally cohesive (homogeneous) and externally isolated (heterogeneous) (e.g. Anderberg, 1973; Cormack, 1971). Traditionally, segmentation is an effort done to tackle the demand heterogeneity inherent in all customer bases. The ultimate segments are as different as possible from each other, but as homogeneous as possible within. With the help of these homogeneous segments a firm can better optimize its marketing activities as all the customers within one segment are expected to respond to the marketing activities in the same way. The idea of using segmentation to match the heterogeneous need in the market with the heterogeneous resources of the firm was already discussed by Alderson (1957, 1965), and more recently by Hunt and Morgan (1995) and Priem (1992). Customer portfolios, on the other hand, have their roots in the modern portfolio theory (Markowitz, 1952) and capital asset pricing model (Litner 1965a, 1965b; Sharpe, 1964). Additionally, the customer portfolio models do not focus that much on the demand heterogeneity in the customer base but on the financial results of that heterogeneity: the aim is to optimize the value of the customer asset, not individual marketing activities.

Deepening the understanding the relationship between segmentation and customer portfolio models, as well as their differences, could considerably enrich the current customer portfolio research. In Table 1, the theoretical domains and main objectives of customer asset management portfolio models, IMP relationship portfolio models and segmentation models are briefly summarized.

	CAM portfolio models	IMP relationship portfolio models	Segmentation models
Theoretical background	Modern portfolio theory	Modern portfolio theory	Cluster analysis
Main objective	Manage customer portfolio for maximized return	Provide tools to manage relationship portfolios (not limited to return maximization)	Find internally homogenous and externally heterogeneous groups within customer base to maximize the effectiveness of marketing activities

Table 1. Summary of the different portfolio models

Conceptual framework

The aim of the study is to create alternative customer asset portfolio models with different levels of complexity, aimed at providing a foundation for increasing firm performance, and to test them empirically. The notion that improving firm's financial performance is the main objective of marketing is been acknowledged by various researchers (e.g. Day and Fahey, 1988; Doyle, 2000; Kumar and Petersen, 2005; Srivastava, Shervani and Fahey, 1998; Zou and Cavusgil, 2002). There are, however, several different measures for firm performance ranging from discounted future cash flows (e.g. Black, Wright, Bachman and Davies, 1998; Rappaport, 1998) to Tobin's q (Anderson, Fornell and Mazvancheryl, 2004; Lewellen and Badrinath, 1997; Tobin, 1969). In this paper it is argued that the optimal firm financial performance is ultimately judged by the shareholders of the firm. Thus, the optimal firm financial performance is reached when the shareholder value is maximized in the long-term. To put it simply, shareholder value is created when a company generates earnings on invested capital in excess of the cost of capital adjusted for risk and time (e.g. Black, Wright, Bachman and Davies, 1998; Rappaport, 1998; Stewart, 1991). Due to this fact, economic profit was chosen as the proxy of firm performance due to its favourable characteristics: it acknowledges both the operating and financial expenses, it allows individual customer relationship level analysis, and empirical evidence shows that positive economic profit leads to an increase in shareholder wealth (Bacidore, Boquist, Milbourn and Thakor, 1997; Kleiman, 1999). Therefore, all proposed three portfolio models have economic profit as one of their fundamental dimensions.

The three tested customer asset portfolio models are of different levels of complexity. The first one, *cumulative economic profit portfolio model*, is based on the cumulative economic profit contribution analysis, building on the work done by Storbacka (2000) on customer profitability. The cumulative economic profit contribution analysis is relatively simple tool: the economic profit created by each customer is calculated and customers are placed in descending order – starting with the customer with the largest economic profit and finishing with the customer with the lowest economic profit.

The cumulative economic profit portfolio model results to three different portfolios: "Margin and cash flow", "Risk management" and "Capacity optimization", all formed based on the projected characteristics of the typical customer relationships and the economic profit contribution in different portfolios. "Margin and cash flow" portfolio consists of large volume customer relationships that all create positive economic profit. Thus, the main objective of this portfolio is to maximize the available margin and cash flow from these customer relationships. "Risk management" portfolio on the other hand consists of a great number of small business volume relationships that each individually had an economic profit contribution close to zero. Based on these characteristics, the main objective of this portfolio is to reduce the overall business risks by reducing the interdependencies in the customer base and by using the small-volume customer relationships as a buffer against business cycle variations. "Capacity optimization" also consists of large volume customer relationships, but unlike customer relationships in "Margin and cash flow" portfolio, these customer relationships create negative economic profit. The objective this portfolio is to use the negative economic profit generating but large-volume customer relationships to optimize the capacity utilization of the production facilities and thus reduce the average cost level of operations by reducing the fixed and capital cost per production unit.

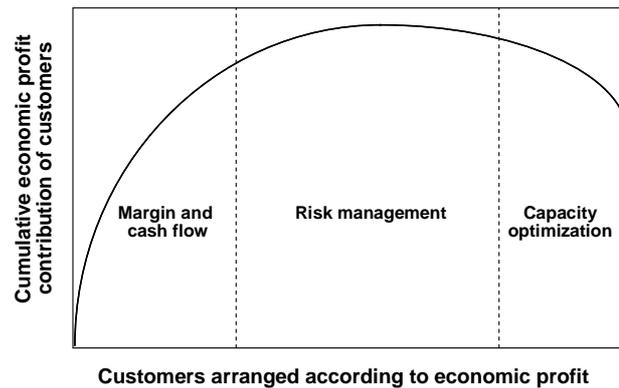


Figure 1. Cumulative economic profit portfolio model

Cumulative economic portfolio model lacks, however, the forward-looking qualities called by e.g. Zeithaml et al. (2006). In the two remaining portfolio models the need for forward-looking qualities is solved in alternative ways. The second portfolio model, *return-risk-volume portfolio model*, is a direct descendant of modern portfolio theory (Markowitz, 1952) with its dimensions of economic profit percentage, economic profit volatility and sales volume. It is important to notice, that the second portfolio model deviates from the return-variance model proposed by Markowitz with one notable exception: it separates ‘return’ into relative profitability level (economic profit percentage) and absolute business volume (sales volume). This deviation is needed due to the innate differences of customer relationships and investment instruments as investment targets. According to modern portfolio theory, it is possible to identify one single efficient investment portfolio that maximizes the return on a given risk level. However, the characteristics of customers as assets do not allow similar mathematical optimization of a single portfolio. The investment volume and the acquisition or divestment of investment instruments can be solely decided by the investor. These fundamentals of efficient markets do not, however, apply to customers as investment targets as both the volume in customer relationships as well as acquisition of new or termination of old customer relationships depends both on the company and the customer. Due to these limitations, a purely mathematical optimization of the entire customer base is impossible. The return-risk-volume portfolio models generates eight different portfolios with different combinations of return, risk and volume levels; e.g. low return + low risk + low volume portfolio, high return + high risk + high volume portfolio and so forth.

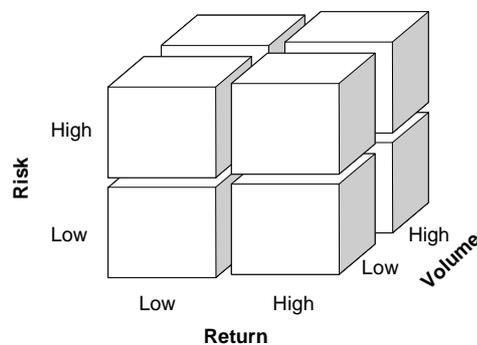


Figure 2. Return-risk-volume portfolio model

The third portfolio model, *spread-duration portfolio model*, is built on the concepts of spread and duration, often used by bond investment professionals (e.g. Leibowitz, Kasker and Nozari, 1990). Spread illustrates the yield of a bond compared to a similar non-risk government bond at the specific moment in time. If the bond gives a higher yield than the government bond, the spread is positive – and vice versa. Duration, on the other hand, is the weighted average maturity of a bond's cash flows. If the bond bears no coupon payments, a bond with a maturity period of n years has duration of n years. If there are coupon payments, the duration will be less than n years. In this study, spread equals economic profit percentage while the duration is an approximation of the time over which the firm expects to maintain positive spread in a particular customer relationship. As it is not possible to create a mathematical formula that calculates the actual duration in terms of time for all customer relationships, the duration has to be estimated by using an index as a proxy. A suitable duration index would consist of measures related to risks related to the customer relationship.

The spread-duration portfolio model creates four different portfolios. “Growth” portfolio consists of customers with high current spread and high estimated duration. “Margin and cash flow” portfolio consists of customers with high current spread but low estimated duration. “Capacity optimization” portfolio consists of customers with low current spread but high estimated duration. Finally, “Monitor” portfolio consists of customers with low current spread and low estimated duration.

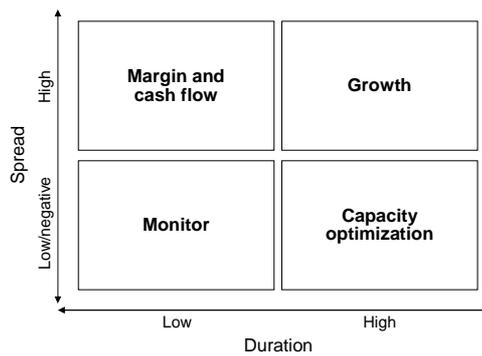


Figure 3. *Spread-duration portfolio model*

The three proposed customer asset portfolio models are summarized in Table 2.

	Cumulative economic profit model	Return-risk-volume model	Spread-duration model
Economic profit dimension	Absolute economic profit	Relative economic profitability	Relative economic profitability (spread)
Future-oriented dimension	N/A	Volatility of absolute economic profit	Duration of positive spread (in practice: duration index)
Business volume dimension	N/A	Absolute turnover	N/A

Table 2. *Summary of the proposed customer asset portfolio models*

Empirical research

The empirical material was gathered in one case study firm, operating internationally in forestry products business and headquartered in Europe. The study focused on a customer base of 1094 individual B2B customers, served by six different factories. The investigation period was two years, from the beginning of 2005 to the end of 2006. The empirical material was gathered from two main sources. The customer specific information on sales volumes, tonnages and earnings before depreciation, interests and taxes (EBDIT) was collected from the corporate databases. The information needed to create the duration index for the spread-duration portfolio model was collected by questionnaires sent to 52 sales managers. The return rate of questionnaires was 100%.

The three alternative customer asset portfolio models proposed in the conceptual framework were tested with the same data from the case study firm. The empirical research deviated from the conceptual framework only in one occasion: instead of economic profit proposed in the conceptual framework as the proxy of firm financial performance, in the case study earnings before depreciation, interests and taxes (EBDIT) was used instead. This deviation from the conceptual framework was imposed by the inconsistent data on physical asset value: some of the physical assets had already been depreciated from the balance sheet and there were no consistent approach within the case study company to value such assets. In the absence of reliable asset valuation, the calculation of economic profit was not feasible. This challenge was taken into account by estimating an EBDIT percentage (EBDIT 19%) that corresponds with economic profit level of zero. This was then used to recalibrate the customer asset portfolio models in such a way that they illustrate the economic profit creation of the customer base, even though the actual economic profit was not calculated.

The customer asset portfolio models were created by using a data from 440 customers. 654 customers were omitted from the analysis for any of the following three reasons. First of all, some customers were omitted from the analysis as their purchases from the case study firm were too small and irregular for the sales managers to conduct a reliable duration index assessment for the spread-duration portfolio models. The second reason for omission emerged if the customer had started the business with the case study firm during the investigation period. Third, only those customers that were active during the entire investigation period were included in the analysis. In order to compare to which kinds of portfolios the individual customers were allocated based on the different models, 20 test customers were selected randomly from the customer base. The allocation of these test customers in different models was later analysed.

Cumulative EBDIT model

The total EBDIT contribution of the customer base in 2006 was 167,614,287 euros. The first portfolio (“Margin and cash flow”) consisted of the customers who contributed to the cumulative EBDIT growth by at least 0.2 percent (107 customers). The third portfolio (“Capacity optimization”) consisted of the customers whose EBDIT contribution was negative (22 customers). The second portfolio (“Risk management”) consisted of the customers with contribution to the cumulative EBDIT growth between 0.19 and 0.0 percent (311 customers). The resulting portfolios of the cumulative EBDIT model are illustrated in Table 3.

Portfolio	# of customers	Total EBDIT
Margin and cash flow	107	147 247 073
Risk management	311	25 068 084
Capacity optimization	22	-4 700 870

Table 3. Summary of the cumulative EBDIT model portfolios

Return-risk-volume model

When forming the return-risk-volume model, decisions had to be made about the threshold values of return, risk and volume: when would a figure be deemed “low” and when “high”. In the study, the return was measured with EBDIT percentage. EBDIT level of 19% was selected as the threshold value as this was estimated to be equivalent to the economic profit level of 0%. Therefore all customer relationships generating an EBDIT above 19% were estimated to contribute positively to overall economic profit creation. The risk was measured by the change in absolute EBDIT from year 2005 to 2006. Customer relationships with EBDIT change exceeding 50% were regarded as high risk relationships. Finally, turnover was chosen as the proxy of business volume. The mean value of turnovers generated by different customer relationships was 1,075,950 euros in 2006. All customer relationships generating a turnover below this threshold level were regarded as low volume relationships. The resulting portfolios of the return-risk-volume model are illustrated in Table 4.

Portfolio	# of customers	Total EBDIT
High return, high risk, high volume	35	70 871 597
High return, low risk, high volume	5	2 631 808
High return, low risk, low volume	13	1 729 563
High return, high risk, low volume	21	2 807 869
Low return, low risk, low volume	32	1 668 502
Low return, high risk, low volume	154	5 154 693
Low return, high risk, high volume	150	71 766 192
Low return, low risk, high volume	30	10 984 063

Table 4. Summary of the return-risk-volume model portfolios

Spread-duration model

When creating the spread-duration model, the same judgement was done concerning the threshold level for economic profit percentage (i.e. spread) as in return-risk-volume model: all customer relationships generating an EBDIT above 19% were regarded as high spread relationships. The duration of customer relationships was estimated by creating an index illustrating the strength of customer relationships and risks involved in them. In this particular case the duration was assessed by looking into 13 parameters: payment behavior, credit rating, production fit, inventories kept by the case firm for the customer, share of customer’s business volume, relationship strength, openness towards cooperation and information sharing, contact level at the customer, customer’s purchase behavior, number of product types purchased, growth potential in relationship, expected future purchases, and profitability trend in the future. All parameters were given a score from 1 to 5. The

index was calculated by giving equal weights to all parameters. In the study it was decided that the top 33% of customer relationships based on the duration index were deemed as high duration customer relationships while the remaining 67% were labelled low duration relationships. The resulting portfolios of the spread-duration model are illustrated in Table 5.

Portfolio	# of customers	Total EBDIT
Growth	18	24 474 525
Margin and cash flow	56	53 566 311
Capacity optimization	123	52 486 191
Monitor	243	37 087 260

Table 5. Summary of the spread-duration model portfolios

Comparison of portfolio models

All the created alternative customer asset portfolio models were tested with the data from the single case study firm. This enabled effective comparison of the chosen portfolio models: it was possible to compare to which kinds of portfolios the individual customers were allocated based on the different models. The summary illustrating the allotted portfolios for the randomly selected 20 test customers is presented in Table 6.

Customer	Cumulative EBDIT model	Return-risk-volume model	Spread-duration model
A	Risk management	Low-Low-Low	Monitor
B	Risk management	Low-Low-High	Monitor
C	Risk management	Low-Low-High	Capacity optimization
D	Risk management	Low-High-Low	Capacity optimization
E	Risk management	Low-Low-High	Monitor
F	Risk management	High-High-Low	Growth
G	Risk management	Low-Low-Low	Capacity optimization
H	Capacity optimization	Low-Low-High	Capacity optimization
I	Risk management	Low-Low-Low	Monitor
J	Risk management	Low-Low-High	Monitor
K	Risk management	Low-Low-Low	Monitor
L	Risk management	Low-Low-Low	Capacity optimization
M	Risk management	Low-High-Low	Monitor
N	Risk management	Low-Low-High	Capacity optimization
O	Risk management	Low-Low-Low	Monitor
P	Risk management	Low-Low-High	Capacity optimization
Q	Risk management	Low-Low-Low	Monitor
R	Risk management	Low-Low-Low	Monitor
S	Margin and cash flow	Low-Low-High	Capacity optimization
T	Capacity optimization	Low-Low-Low	Monitor

Table 6. Comparison of different customer asset portfolio models

As can be seen from Table 6, there are considerable differences between the different customer asset portfolio models. Several high volume customer relationships were allocated in cumulative

EBDIT model in “risk management” portfolio which in the conceptual framework was defined as consisting of small-volume customer relationships. This illustrates the fact that the profitability or economic profitability of large-volume customer relationships can be close to zero: profitability and turnover do not necessarily correlate. Therefore it can be concluded that if risk management through small-volume customer relationships is needed, the cumulative EBDIT or economic profit model is not sufficient.

It is also interesting to notice that the only test customer allotted in cumulative EBDIT portfolio model in “Margin and cash flow” portfolio was allocated into very different portfolios in both return-risk-volume and spread-duration portfolio models (“Low-low-high” and “Capacity optimization” respectively”). This is mainly explained by the fact that the cumulative EBDIT model is based on the absolute profitability as the other two portfolio models take relative profitability as their starting points. The same limitation with absolute profitability versus relative profitability and business volume is echoed in the customer allotted to the “Capacity optimization” portfolio in the cumulative EBDIT model. The other test customer allotted to this portfolio is actually a low-volume customer, not a high-volume customer predicted in the conceptual framework, that just happens to generate considerable absolute loss. It could, therefore, be considered that both relative profitability and absolute profitability / business volume should be included in the optimal portfolio model to ensure more comprehensive view on the customer relationships in the customer base.

The most interesting findings come, however, from comparison of return-risk-volume portfolio model and spread-duration portfolio model. There are no differences among the test customers regarding the return dimension of the return-risk-volume portfolio and spread dimension of the spread-duration portfolio. This was as expected as both these dimensions were assessed with EBDIT percentage. Comparing the risk dimension of the risk-return-volume portfolio and the duration dimension of the spread-duration portfolio brings surprising findings. In the conceptual framework, both these dimensions were explained to indicate the future risks involved in the customer relationships. This argument seems to hold true when comparing the ‘Capacity optimization’ (low spread, high duration) customers from the spread-duration portfolio to the assessments of the same customers in the return-risk-volume portfolio: out of 8 ‘Capacity optimization’ customers, 7 were also assessed to be low-risk relationships also by the return-risk-volume portfolio model. However, the results of comparing ‘Monitor’ (low spread, low duration) customers from the spread-duration portfolio to the assessments of the same customers in the return-risk-volume portfolio indicate entirely different situation: out of 11 ‘Monitor’ customers, 10 were assessed to be high-risk relationships.

Such contradictory findings seem to indicate a systematic error in the used models. It seems that the duration index created by the case study firm does not only assess the risks involved in the customer relationships; it also uses parameters that correlate with current and future business volume. This hypothesis is supported when the business volumes of ‘Monitor’ and ‘Capacity optimization’ customers were assessed: 8 out of 11 ‘Monitor’ customers were assessed to have lower than average business volume, while 5 out of 8 ‘Capacity optimization’ customers were assessed to have higher than average business volume – even though the conceptual spread-duration portfolio model does not take business volume into account at all.

Conclusions and implications for further research

The need to establish the link between marketing and firm performance is unlikely to grow any less important in the future. Several authors (e.g. Berger et al. 2006; Gupta, Lehmann and Stuart, 2004; Stahl, Matzler and Hinterhuber, 2003) have proposed that customer asset management could be the needed link between marketing and firm performance. Currently the majority of customer asset management models are based on customer lifetime value (CLV) calculations. However, customer asset portfolio models provide an interesting alternative to CLV models – not least due to the fact that the calculations needed to create customer asset portfolio models are usually less demanding than the ones required by the CLV models, thus making them more appealing to the practitioners.

In the present study three alternative customer asset portfolio models were created that all were aimed at providing a foundation for increasing firm performance: cumulative economic profit portfolio model, return-risk-volume portfolio model and spread-duration portfolio model. After the conceptual formulation, the customer asset portfolio models were tested empirically by using a data from the same case study firm.

The results of the empirical research seem to indicate that the cumulative economic profit portfolio model is inferior compared to the other two available models due to the fact that it does not include dimensions illustrating the relative profitability of customer relationship or dimensions that provide insight about the future of the customer relationships. These two shortcomings are amended in the return-risk-volume and spread-duration portfolio models. Even though the duration index created by the case study firm does not follow the conceptual framework to the detail, it can be argued that the findings of the study show that both the return-risk-volume portfolio model and spread-duration portfolio model open interesting possibilities both for academic researchers and practitioners.

Return-risk-volume customer asset portfolio model seems to be the most interesting portfolio model to develop and test further for two reasons. First of all, it is the only portfolio model that takes into account the absolute business volume of customer relationships. Second, the return-risk-volume portfolios can be created by using quantitative data usually available in corporate databases, as opposed to spread-duration portfolio model that requires an extensive human component both in creating a suitable duration index and in gathering the needed qualitative data. Return-risk-volume portfolio model should in further studies be investigated with longer investigation periods than two years to create more reliable view on business volume volatility. Additionally, the conceptual return-risk-volume framework could be elaborated by discussing the potential roles of the portfolios in the model.

Regarding the spread-duration customer asset portfolio model, further research could be called upon in investigating the duration aspect of spread-duration portfolio model. The index used in the case study firm was created under influence of managerial pressures, so in further studies it could be linked more strongly to the theoretical discussion on risk in the customer base.

References

- Alderson, W. (1957), **Marketing Behavior and Executive action: A Functionalist Approach to Marketing Theory**, Richard D. Irwin, Homewood.
- Alderson, W. (1965), **Dynamic Marketing Behavior: A Functionalist Theory of Marketing**, Richard D. Irwin, Homewood.
- Anderberg, M.R. (1973), **Cluster Analysis for Applications**, Academic Press, New York.
- Bacidore, J.M., Boquist, J.A., Milbourn, T.T. and Thakor. A.V. (1997), "The search for the best financial performance measure", **Financial Analyst Journal** Vol 53 No 3, pp. 11-20.
- Berger, P.D., Eechambadi, N., George, M., Lehmann, D.R., Rizley, R. and Venkatesan, R. (2006), "From customer lifetime value to shareholder value: theory, empirical evidence and issues for future research", **Journal of Service Research**, Vol 9 No 2, pp. 156-167.
- Blattberg, R.C. and Deighton, J. (1996), "Manage marketing by the customer equity test", **Harvard Business Review**, Vol 74 No 4, pp. 136-144.
- Bolton, R.N, Lemon, K.N. and Verhoef, P.C. (2004), "The theoretical underpinning of customer asset management: a framework and propositions for future research", **Academy of Marketing Science**, Vol 32 No 2, pp. 271-292.
- Campbell, N.C.G. and Cunningham, M.T. (1983), "Customer analysis for strategy development in industrial markets", **Strategic Management Journal**, Vol 4 No 4, pp. 369-380.
- Cormack, R.M. (1971), "A review of classification", **Journal of the Royal Statistical Society**, Series A, 134, pp. 321-353.
- Day, G. and Fahey, L. (1988), "Valuing market strategies" **Journal of Marketing**, Vol 52 No 3, pp. 45-57.
- Dhar, R. and Glazer, R. (2003), "Hedging customers", **Harvard Business Review**, Vol 81 No 5, pp. 86-92.
- Dibb, S. and Simkin, L. (2001), "Market segmentation: diagnosing and treating the barriers", **Industrial Marketing Management**, Vol 30, pp. 609-625.
- Dickson, P.R. and Ginter, J.L. (1987), "Market segmentation, product differentiation, and marketing strategy", **Journal of Marketing**, Vol 51 No 2, pp. 1-10.
- Doyle, P. (2000), "Value-based marketing", **Journal of Strategic Marketing**, Vol 8 No 4, pp. 299-311.

- Dubinsky, A.J. and Ingram, T.N. (1984), "A portfolio approach to account profitability", **Industrial Marketing Management**, Vol 13 No 1, pp. 33-41.
- Fiocca, R. (1982), "Account portfolio analysis for strategy development", **Industrial Marketing Management**, Vol 11 No 1, pp. 53-62.
- Gupta, S. and Lehmann, D.R. (2003), "Customers as assets", **Journal of Interactive Marketing**, Vol 17 No 1, pp. 9-24.
- Gupta, S., Lehmann, D.R. and Stuart, J.A. (2004), "Valuing customers", **Journal of Marketing Research**, Vol 41 No 1, pp. 7-18.
- Hansotia, B. (2004), "Company activities for managing customer equity", **Journal of Database Marketing & Customer Strategy Management**, Vol 11 No 4, pp. 319-332.
- Hogan, J.E., Lehmann, D.R., Merino, M., Srivastava, R.K., Thomas, J.S. and Verhoef, P.C. (2002), "Linking customer assets to financial performance", **Journal of Service Research**, Vol 5 No 1, pp. 26-38.
- Hogan, J.E., Lemon, K.N. and Rust, R.T. (2002), "Customer equity management: charting new directions for the future marketing", **Journal of Service Research**, Vol 5 No 1, pp. 4-12.
- Hunt, S.D. and Morgan, R.M. (1995), "The comparative advantage theory of competition", **Journal of Marketing**, Vol 59 No 2, pp. 1-15.
- Johanson, M.D. and Selnes, F. (2004), "Customer portfolio management: toward a dynamic theory of exchange relationships", **Journal of Marketing**, Vol 68 No 2, pp. 1-17.
- Kleiman, R.T. (1999), "Some new evidence on EVA companies", **Journal of Applied Corporate Finance**, Vol 12 No 2, pp. 80-91.
- Krapfel, R.E. Jr., Salmond, D. and Spekman, R. (1991), "A strategic approach to managing buyer-seller relationships", **European Journal of Marketing**, Vol 25 No 9, pp. 22-37.
- Kumar, V., Lemon, K.N. and Parasuraman, A. (2006), "Managing customer for value: an overview and research agenda", **Journal of Service Research**, Vol 9 No 2, pp. 87-94.
- Kumar, V. and Petersen, J.A. (2005), "Using customer-level marketing strategy to enhance firm performance: a review of theoretical and empirical evidence", **Journal of the Academy of Marketing Science**, Vol 33 No 4, pp. 504-519.
- Leibowitz, M.L., Kasker, W.S. and Nozari, A. (1990), "Spread duration: a new tool for bond portfolio management", **Journal of Portfolio Management**, Vol 16 No 3, pp. 46-53.
- Lintner, J. (1965a), "Security prices, risks, and maximal gains from diversification", **Journal of Finance**, Vol 20 No 4, pp. 587-615.

- Lintner, J. (1965b), "The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets", **The Review of Economics and Statistics**, Vol 47 No 1, pp. 13-37.
- Markowitz, H.M. (1952), "Portfolio selection", **Journal of Finance**, Vol 7 No 1, pp. 77-91.
- Pfeifer, P.E., Haskins, M.E. and Conroy, R.M. (2005), "Customer lifetime value, customer profitability and the treatment of acquisition spending", **Journal of Managerial Issues**, Vol 17 No 1, pp. 11-25.
- Piercy, N. F. and Morgan, N.A. (1993), "Strategic and operational segmentation: a managerial analysis", **Journal of Strategic Marketing**, Vol 1 No 2, pp. 123-140.
- Priem, R.L. (1992), "Industrial organization economics and Alderson's general theory of marketing", **Journal of the Academy of Marketing Science**, Vol 20 No 2, pp. 135-141.
- Rust, R.T., Lemon, K.N. and Zeithaml, V.A. (2004), "Return on marketing: using customer equity to focus marketing strategy", **Journal of Marketing**, Vol 68 No 1, pp. 109-127.
- Ryals, L J. and Knox, S. (2005), "Measuring risk-adjusted customer lifetime value and its impact on relationship marketing strategies and shareholder value", **European Journal of Marketing**, Vol 39 No 5/6, pp. 456-472.
- Sausen, K., Tomczak, T. and Herrmann, A. (2005), "Development of a taxonomy of strategic market segmentation: a framework for bridging the implementation gap between normative segmentation and business practice", **Journal of Strategic Marketing**, Vol 13 No 3, pp.151-173.
- Selden, L. and Colvin, G. (2003), "M&A needn't be a loser's game", **Harvard Business Review**, Vol 81 No 6, pp. 70-79.
- Sharpe, W.F. (1964), "Capital asset prices: a theory of market equilibrium under conditions of risk", **Journal of Finance**, Vol 19 No 3, pp. 425-442.
- Srivastava, R.K., Shervani, T.A. and Fahey, L. (1998), "Market-based assets and shareholder value: a framework for analysis", **Journal of Marketing**, Vol 62 No 1, pp. 2-18.
- Stahl, H.K., Matzler, K. and Hinterhuber, H.H. (2003), "Linking customer lifetime value with shareholder value" **Industrial Marketing Management**, Vol 32 No 4, pp. 267-279.
- Storbacka, K. (2000). "Customer profitability: analysis and design issues", in Seth, J.N. and Parvatiyar, A. (Eds.), **In Handbook of Relationship Marketing**, Sage Publications, Thousand Oaks, pp. 565-586.
- Thomas, J.S., Reinartz, W. and Kumar, V. (2004), "Getting the most out of all your customers", **Harvard Business Review**, Vol 82 No 7/8, pp. 116-123.

Venkatesan, R. and Kumar, V. (2004), "A customer lifetime value framework for customer selections and resource allocation strategy", **Journal of Marketing**, Vol 68 No 4, pp. 106-125.

Wind, Y. (1978), "Issues and advances in segmentation research", **Journal of Marketing Research**, Vol 15 No 3, pp. 317-337.

Yorke, D.A. and Droussiotis, G. (1994), "The use of customer portfolio theory: an empirical survey", **Journal of Business and Industrial Marketing**, Vol 9 No 3, pp. 6-18.

Zeithaml, V.A., Bolton, R.N., Deighton, J., Keiningham, T.L., Lemon, K.N. and Petersen, J.A. (2006), "Forward-looking focus: can firms have adaptive foresight?", **Journal of Service Research**, Vol 9, No 2, pp. 168-183.

Zolkiewski, J. and Turnbull, P. (2000), "Relationship portfolios – past, present and future", Conference paper, **16th IMP Conference**, Bath.

Zolkiewski, J. and Turnbull, P. (2002), "Do relationship portfolios and networks provide the key to successful relationship management?", **Journal of Business and Industrial Marketing**, Vol 17 No 7, pp. 575-597.

Zou, S. and Cavusgil, S.T. (2002), "The GSM: a broad conceptualization of global marketing strategy and its effects on firm performance", **Journal of Marketing**, Vol 66 No 4, pp. 40-56.