



Linking customer lifetime value with shareholder value

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Abstract

The measurement of customer lifetime value has become a key issue for developing and maintaining long-term profitable customer relationships. It plays a significant role in customer acquisition and retention decisions. Given the growing importance of creating value for shareholders, market strategies have to be evaluated by their capacity to achieve this goal. Accordingly, both the acquisition and maintenance of customers must result in superior cash flows and augmented shareholder value. However, little attention has been paid to the link between customer lifetime value and shareholder value. The authors of this paper provide a conceptual framework for linking customer lifetime value to shareholder value. It is argued that customers have to be treated as assets that increase shareholder value by accelerating and enhancing cash flows, reducing cash flow volatility and vulnerability and increasing the residual value of the firm.

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1. Introduction

With the growing importance of shareholder value as a guiding principle for managing a firm, traditional performance yardsticks have come under scrutiny. It is argued that accounting-based profitability measures do not adequately reflect the value of a firm. The main reasons are that (1) accounting methods differ widely, (2) risks are not adequately taken into account, (3) investment requirements are ignored, (4) dividend policy is not reflected and (5) the time value of money is ignored [1]. It is generally agreed that the market value of a firm emanates from the net present value (NPV) of future cash flows generated by the firm's assets, discounted at an appropriate interest rate and adjusted for inflation and risk [2]. Hence, proponents of the shareholder value approach claim that strategies and initiatives must be evaluated against the NPV of the cash flows they generate.

Marketers, however, have been reluctant to adopt this approach [3,4]. There are only a few studies that deal with the relationship between marketing activities and share-

holder value in terms of the underlying concept [3–5] or with respect to measurement issues [6–10]. This can be attributed to the lack of a comprehensive, coherent and integral framework that helps marketers in assessing the value of marketing activities, as well as in measuring and communicating outcomes of marketing activities in terms of shareholder value [3]. This is also true of the customer lifetime value. Customer valuation has become an important issue, given the rise of relationship marketing. Several measures of customer profitability have been developed [11]. Nevertheless, the link between customer lifetime value and shareholder value has not yet been fully investigated.

Beginning with the work of Srivastava et al. [3], this paper develops a conceptual framework for the assessment of customer profitability based on their contribution to shareholder value. It is organized as follows: First, the notion of customer lifetime value and requirements for its computation is discussed. Then a framework for a shareholder-value-oriented measurement of customer profitability is presented. It is argued that customers have to be seen as assets that may positively contribute to the shareholder value by accelerating and enhancing cash flow, reducing its volatility and vulnerability and increasing the residual value of the firm. Finally, the link between the four components of customer lifetime value and the drivers of shareholder value is explored.

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2. Customer lifetime value

Relationship marketing constitutes a major shift in marketing theory and practice. Rather than focusing on discrete transactions, it emphasizes the establishment, development and maintenance of long-term exchanges [12]. Such relationships are thought to be more profitable than short-term relationships as a result of exchange efficiencies. This is especially true of customer relationships [13]. However, since not all customers are financially attractive to the firm, it is crucial that their profitability be determined and that resources be allocated according to the customer’s lifetime value (CLV). It is argued that customer relationships are viewed as investment decisions and customers as generators of revenue streams. Customer relationships also generate costs. Hence, in order to measure the customer lifetime value, all revenues and costs pertaining to a customer relationship must be assessed. It is then possible to calculate the current value of cash flow streams [14]. Though, for example, law firms seem to be able to assign even minor costs such as phone calls or photocopying to specific customers, accurately estimating the revenues and costs of a relationship remains a challenging task for a number of reasons:

1. Standard accounting does not allow for allocating costs to specific customer relationships.
2. Only monetary benefits of customer relationships are taken into account.
3. Revenues and costs vary over time.
4. Cash flow streams are generated at different points in time and at different levels of risk.

Consequently, the following requirements have to be fulfilled in order to measure customer profitability accurately:

Requirement 1: All costs must be allocated to customers commensurate with the amount of supplier’s resources that the customers absorb.

Many companies assume that customers with the highest sales volume are the most profitable customers and believe in the Pareto Rule, which states that 20% of the customers generate 80% of the profits. They use Pareto Analysis as an indicator of customer profitability, with sales volume being the most commonly used measure [15]. Volume-based measures can, of course, be very misleading. Typically, the highest-volume customers also exert the greatest bargaining power, thus enjoying the lowest prices at a high level of pre- and after-sales service. Low-volume customers, on the other hand, generally pay the highest prices but may absorb even more sales and service resources than high-volume customers.

As a result, medium-volume customers tend to be the most profitable. Unfortunately, standard accounting systems focus on periods instead of individual customers or customer groups [16]. If overhead costs are allocated on a volume basis, customer profitability is skewed by penalizing the “easy” customers and favoring the “demanding” ones. Thus, in many cases, low-maintenance customers subsidize those with high service demands. To avoid such twists, customers need to be treated as a bundle of cost drivers. This is precisely the principle of Activity-Based Accounting (ABC) [17]. It implies that customers are the cause of activities and that resources are employed to carry out activities to serve them. Costs are thus allocated on the basis of transactions. ABC therefore provides a fairly accurate means of measuring costs related to customer relationships.

Requirement 2: Both monetary and nonmonetary benefits have to be taken into account.

Typically, customers are evaluated on their present and future monetary revenues. There are several well-established analytical techniques for predicting future purchase behavior [11,14]. However, if only monetary revenues are included, customer profitability is likely to be underestimated. A more comprehensive concept of customer lifetime value is based on the following four value components (Fig. 1).

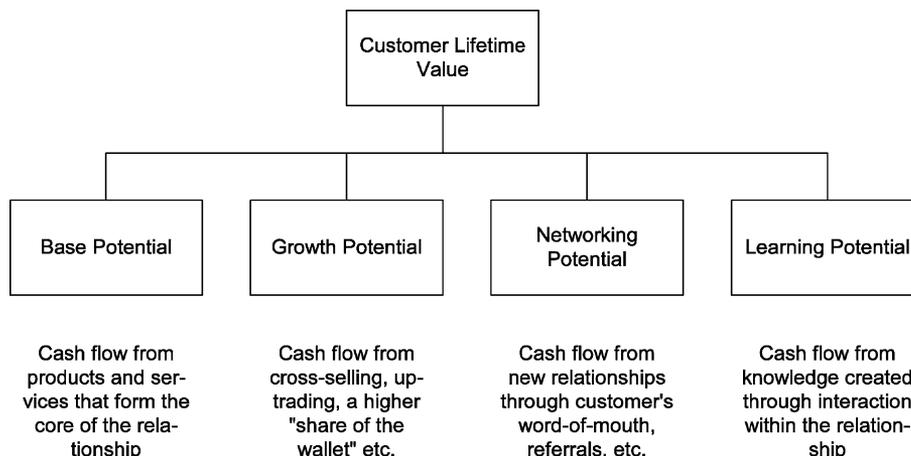


Fig. 1. The four components of CLV.

(1) The *base potential*. Net proceeds of sales for those products that constitute the base of the customer relationship, as well as the costs of acquisition, development and retention, are estimated over the expected duration of the relationship. The cash flow of each period is then discounted to a NPV.

(2) The *growth potential*. Cash flows may increase as a result of cross-selling, up-trading, a higher “share of wallet” or moving to the next phase of the customer life cycle.

(3) The *networking potential*. Additional revenues may come from referrals and/or from the customer’s reputation. Referrals have a twin effect. First, they may lead to additional sales and lower acquisition costs as new customers are attracted through word-of-mouth advertising. Second, referrals can increase the effectiveness of advertising and promotion because customers develop a more favorable attitude toward the firm’s communication. Hence, a customer who is regarded as opinion leader in an industry or market segment constitutes a particularly valuable source of reputation for the supplier. Large and prestigious customers who are known for applying stringent criteria in their selection of suppliers can do much to enhance the reputation of the firm. Being an approved supplier of such companies makes the entry in new markets and the establishment of new customer relationships much easier [18].

(4) The *learning potential*. This refers to knowledge creation through interaction. The intimacy of customer relationships makes it possible to develop, test and refine different types of knowledge, such as market conditions (competitors, customers, channels, suppliers, social and political interest groups), technologies and business processes, or future trends [3]. These types of knowledge can be transferred into more reliable forecasts and plans, providing a better understanding of current and future customer needs and consequently leading to higher quality of products and processes.

Requirement 3: Fluctuations in revenues and costs over the duration of a customer relationship have to be taken into account.

A commonly held assertion is that the profits of a customer relationship increase over time. Reichheld and Sasser [13] argue, based on an analysis of numerous customer relationships, that the longer customers stay with a supplier, the higher the profits they generate. They attribute this to falling transaction costs, increasing purchase volumes, growing positive word-of-mouth effects and lower price sensitivity. While many studies support this model [19,20], Dowling and Uncles [21] warn that the commonly hypothesized lifetime–profitability relationship might be a “gross oversimplification.” A study by Reinartz and Kumar [22], carried out with the customers of a catalogue dealer, did not support these assumptions. Long-term customers are not necessarily profitable customers. The dynamics of costs and revenues

seem to depend on the nature of the customer relationship. In a noncontractual setting, exchange efficiencies might be lower since the company must ensure that the relationship stays alive [22]. This requires additional resources. Nevertheless, changes in revenues and costs over time must be estimated and taken into account if and when they occur.

Requirement 4: The cash flows generated in different periods during a customer relationship need to be discounted to the present value.

Customers and channels are assets that must be cultivated and leveraged [23]. They can be viewed as investments and are generators of revenue streams. Consequently, the lifetime value of a customer is a function of the potential revenue stream, the costs associated with generating the revenue and the duration of the relationship. Costs and revenues for each period of time have to be projected and discounted to the present. This allows the firm to compare the lifetime value of different customers and allocate resources efficiently. The longer the time horizon of the customer value analysis, the more purchase cycles are incorporated, and this increases uncertainty. Therefore, the risk of each relationship in terms of volatility and vulnerability must be estimated.

Requirement 5: The uncertainty associated with customer relationships must be taken into account.

In each customer relationship, there is an inherent risk of vulnerability and volatility. Vulnerability is defined as occurrences that negatively affect cash flow streams, whereas volatility is occurrences that create fluctuations in cash flow [4]. Srivastava et al. [4] identify three levels of risk that can cause vulnerability and volatility: macro-environment, industry and firm. For the purpose of customer valuation, the “share of wallet” is added as a fourth level of risk. Higher volatility and vulnerability mean higher risks associated with cash flow streams, which increase the cost of capital. Consequently, the discount rate is higher, so the resulting shareholder value is lower.

In summary, an accurate measurement of customer lifetime value requires:

1. an exact allocation of costs to customer relationships according to the resources employed;
2. an estimation of all monetary and nonmonetary benefits created by the particular customer relationship;
3. a consideration of cost and revenue changes over the estimated time span of a customer relationship;
4. the discounting to present of future cash flows generated over the estimated time span of a customer relationship; and
5. an estimation of the relationship risks.

Based on these premises, the following section focuses on the relationship between customer lifetime value and shareholder value.

3. Customer lifetime value and shareholder value

In the previous section, it was suggested that customer relationships should be viewed as investment decisions. Thus, customer relationships are assets and customers are generators of revenues. It is reasonable to assume that companies with well-established and profitable long-term relationships generate higher future cash flows than companies with weaker, short-term customer relationships.

The shareholder value corresponds to the present value of (1) cash flows generated during the planning period and of (2) the residual value of a firm after the period in question [24]. Accordingly, the shareholder value is driven by [3,25]:

1. processes that *enhance cash flows* by increasing revenues and/or reducing costs, working capital and investments;
2. processes that *accelerate cash flows*, since earlier cash flows produce a higher present value of money;
3. processes that *reduce cash flow volatility and vulnerability*, which, indirectly, lower the cost of capital; and
4. processes that *increase the residual value* of a firm.

This framework was originally proposed by Srivastava et al. [3] for the purpose of analyzing the interface between finance and marketing. In their seminal article, they discuss the contribution of marketing activities to the creation of shareholder value. The authors argue that the relevance of cash flows and shareholder value have been neglected in both marketing theory and practice. They urge researchers to adapt their framework as “further research in these areas will help sharpen marketers’ understanding of the impact of marketing activities on shareholder value.”

The following section provides some adaptations of this framework for the assessment of customer lifetime value. The shareholder-value-based assessment of customer life time value will allow marketing practitioners to allocate resources in such a way that shareholder value is maximized by addressing the following questions:

1. To what extent do customers contribute to a company’s shareholder value through differences in the amount of cash flows generated?
2. To what extent do customers contribute to a company’s shareholder value through differences in the speed of cash flows generated?
3. To what extent do customers contribute to a company’s shareholder value through differences in the vulnerability and volatility of cash flows generated?
4. To what extent do customers contribute to a company’s shareholder value through differences in the residual value of a relationship investment?

As stated earlier, customer lifetime value is composed of four value components, namely (1) the *base* potential, (2) the *growth* potential (e.g. cross-selling, up-trading, increase of share of wallet), (3) the *networking* potential (e.g. referrals, word-of-mouth, gains in reputation) and (4) the *learning* potential (e.g. creating knowledge through interaction). In the following section, these four value components are related to the drivers of shareholder value in order to demonstrate how different customers contribute to the shareholder value of the supplier.

4. Base potential and shareholder value

4.1. Increasing cash flow

The amount of cash flow generated by a customer relationship depends on *sales volume*, *price* and *cost*. In order to estimate sales volume over the time span of the relationship, the *unit sales per period* and the *time horizon of the customer relationship* have to be determined. The length of the relationship is important as scale economies and experience effects may reduce the relationship costs over time. Price is primarily a function of the customer’s *bargaining power*, which, in turn, mirrors the supplier’s dependence. Typically, high-volume customers have a powerful negotiating position and tend to squeeze profit margins by demanding volume discounts.

A customer’s *price sensitivity*, which is influenced by several factors [26], will obviously change over time. There are two schools of thought. One argues that a customer’s price sensitivity will decrease as the relationship matures and mutual trust develops. When that happens, the customer is in a position to clearly assess the overall benefits of the relationship with the supplier and will therefore refrain from (at least excessive) bargaining. The other school of thought argues that as the relationship matures, (a) the likelihood of more attractive alternatives emerging will increase and (b) the customer will have gained an intimate knowledge of the supplier’s cost–benefit structure—both inducements for the customer to bargain even harder. Whatever the view adopted, the development of price sensitivity has to be carefully determined given the specific circumstances of the customer relationships.

The costs associated with a customer relationship comprise the acquisition costs (either as singular costs or overheads for advertising, product specifications, etc.), the *relationship* costs (routine costs associated with serving the customer) and the *retention* costs (the cost of defending, strengthening and expanding the relationship).

4.1.1. Acquisition costs

Blattberg and Deighton [27] suggest that prospects and customers are segmented into behaviourally and attitudinally homogeneous groups in order to estimate acquisition

and retention expenditures. They assume that acquisition costs are in part influenced by the *customers' attitude*. In fact, brand equity literature offers strong empirical evidence that customers with favorable attitudes toward a product or brand respond more quickly and effectively to marketing efforts [28], so the cost of acquiring favorably disposed customers will be lower. The same applies to customers who are *dissatisfied* with their ongoing relationship with a competitor.

However, when a customer changes relationships, he must bear the switching costs. These include both monetary costs (e.g. tangible investments) and nonmonetary costs (e.g. psychological costs) and may constitute a barrier to switching [29]. Switching costs are only a part of the overall cost of changing a relationship. Morgan and Hunt [12] propose a more comprehensive view and introduce the expression *termination costs*, which they define as "... all expected losses from termination." These costs "... result from the perceived lack of comparable potential alternative partners, relationship dissolution expenses, and/or substantial switching costs." The higher the expected termination costs perceived by the customers, the more committed they will be to an existing relationship. As a result, costs to acquire these customers will be high as

termination costs must be at least offset by the competing supplier.

According to the resource-based view of the firm [30], market-based assets that are convertible (i.e. resources that can be used to exploit opportunities and/or neutralize threats), rare, inimitable and for which there are no perfect substitutes have a high potential to create and sustain value [3]. Companies that possess such resources are in a *quasi-monopolistic* position and consequently enjoy lower acquisition costs than their competitors.

4.1.2. Relationship costs

Relationship costs are defined as those that accrue in servicing a customer over time. They are in a sense maintenance costs—expenditures required to safeguard customer satisfaction or at least customer indifference. In allocating such maintenance costs to a particular customer relationship, it is vital to first eliminate the dissatisfiers, for example, inadequate quality, punctuality, communication, service and so on. Lingering dissatisfiers will thwart all efforts to raise customer satisfaction beyond a level at which the relationship is highly vulnerable. Relationship costs are influenced by the amount, frequency and specificity of transactions, that is, by *economies of scale and experience curve effects* [31].

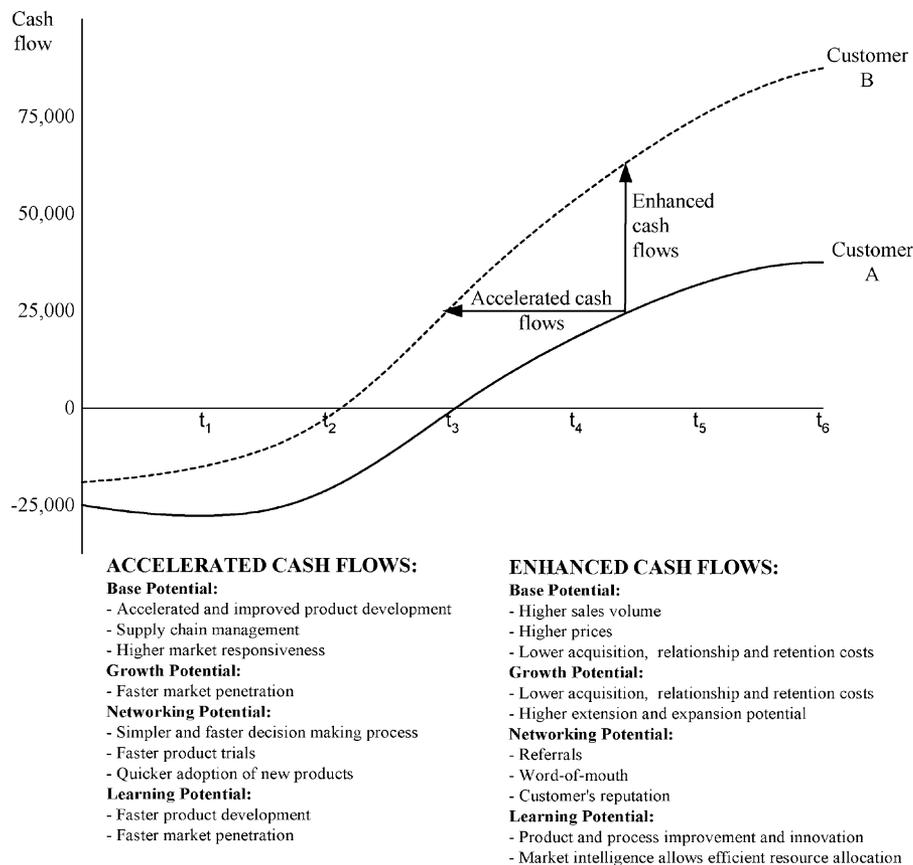


Fig. 2. The effect of cash flow acceleration and enhancement.

4.1.3. Retention costs

In many cases, customers are kept through costly retention programmes. The retention costs for each customer should be allocated on a case-by-case basis because they not only vary but also reduce the amount of cash flow generated by the individual customer.

4.2. Accelerating cash flow

In general, cash flow can be accelerated by (1) faster product development, (2) a more efficient supply chain management and (3) a quicker diffusion of new products in the marketplace [3,5]. Srivastava et al. discuss in detail ways to improve the product development management process in order to accelerate time-to-market and market acceptance. Getting the right input (e.g. customer requirements, competitors’ potential new offerings) is crucial. By involving its most *demanding and knowledgeable customers* in product development, the firm can avoid false starts and delays, reduce its time to market and foster market acceptance.

Furthermore, customers may contribute to an acceleration of cash flow if and when they are integrated in *supply chain management*. Automated retail and warehouse ordering, flow-through logistics and so on allow the firm to optimize time and costs in the replenishment system. Buyers and sellers gain the advantages of vertical integration with none of its drawbacks (“virtual integration” [32]).

Cash flows can also be accelerated by targeting those customers who are *highly responsive* to marketing efforts. Everett Rogers’ [33] view on the diffusion of innovations can be helpful in identifying customers who respond quickly to the introduction of new products or services. If *innovators* and *early adopters* are targeted, a faster market penetration can be achieved. Customers with high *brand awareness* and *favorable brand attitudes* are also more likely to test, accept and recommend new products at a faster rate (Fig. 2) [28].

4.3. Reducing cash flow volatility and vulnerability

While vulnerability can be defined “as any occurrence that negatively affects cash flow,” volatility is “any occurrence that creates fluctuations in cash flow” [4]. Vulnerability and volatility are associated with the predictability and stability of future cash flows, which, in turn, influence the discount rate and therefore the NPV of cash flow streams. Srivastava et al. [4] discuss three levels of risks that may be considered sources of vulnerability and volatility: *macroenvironment, industry, and firm*. For the purpose of customer valuation, a fourth level has to be added: *share-of-wallet risks*.

Changes in the technological, political, economic, judicial or social environment may affect sales directly or indirectly through their impact on industry or competitive

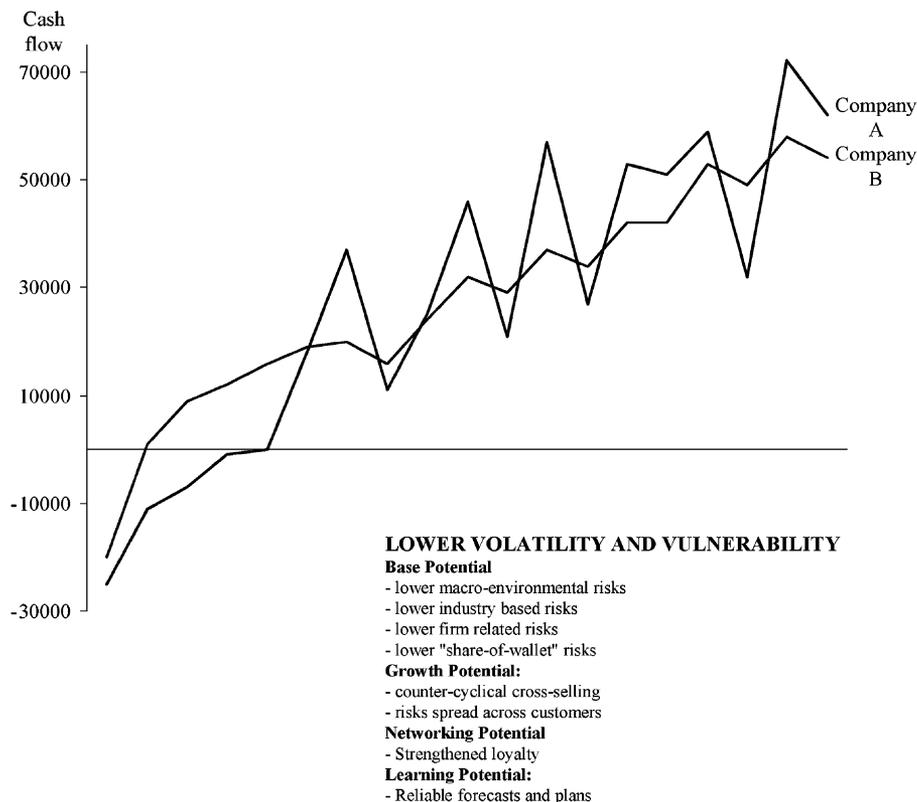


Fig. 3. The effect of volatility and vulnerability on CLV (adapted from Ref. [3]).

conditions [4]. For instance, firms in different industries are affected to different extents by changes such as an increase in oil price, exchange rate fluctuations or growing environmentalism. Industries that are characterized by technological discontinuities and deregulations face higher risks. At industry level, vulnerability and volatility of cash flow is influenced by competitive forces [34]. Growth rates, mergers and acquisitions, market entry barriers, substitution threats, threat of new entrants and so on are major sources of risk.

The third source of cash flow risks is the company itself. Vulnerability and volatility of cash flows are influenced by the quality of management, investment decisions, the nature and stability of customer–supplier relationships and so on.

Finally, customers differ with respect to their “share-of-wallet” risk. Typical questions in this context are, among others: Is the customer at all interested in long-term relationships? What is his bargaining power? Will he behave opportunistically? The share-of-wallet risk is directly related to the customer type buying behavior. Jackson [35], for instance, groups industrial buyers into two categories: *always-a-share* and *lost-for-good customers*. Lost-for-good customers have typically made long-term investments and face high switching costs. Hence, they are either totally committed to the company or totally lost to another vendor. Always-a-share customers, however, spread their purchasing volume over several vendors. They display a rather opportunistic buying behavior. Because their switching costs are low, they continuously experiment with new vendors, and the share of wallet can fluctuate substantially.

These four levels of risks need to be included in the measurement of customer lifetime value, as they directly affect vulnerability and volatility of demand and indirectly, via the discount rate, affect the shareholder value. The following issues need to be addressed: (1) the amount of risk associated with each customer, (2) risk reduction through diversification of customer base and (3) the possibility of increasing switching costs in order to reduce share-of-wallet risks. There will be significant differences between customers with regard to these three issues.

4.4. Increasing the residual value of the firm

The residual value of a firm is the expected present value of cash flows that are generated after the end of a certain planning period [1]. The *sustainability* of the size, *quality*, *trust*, *commitment* and *reputation* of the customer base plays an important role here (Fig. 3).

5. Growth potential and shareholder value

In the previous section, the relationship between the four components of customer value and the four drivers of

shareholder value in terms of the base potential were discussed. Some of the aspects analyzed above are also valid for the growth potential, so they will not be discussed again.

5.1. Increasing cash flow

The growth potential can enhance cash flow in two ways. As customer relationships already exist, *acquisition*, *relationship* and *retention costs* will be lower. Additional sales may lead to economies of scale and scope. From a customer’s point of view, extending the relationship beyond the base potential depends on his perception of the supplier’s *trustworthiness* and his experience during the initial phases of the relationship, as well as the access to possible *synergies* and *strategic considerations* (e.g. the question of multiple or single sourcing). Thus, customers with a high level of trust and a readiness to exploit cross-buying synergies and single sourcing are especially valuable.

5.2. Accelerating cash flow

Cross-selling, *up-trading*, a higher *share of wallet* or moving to the next phase of the customer *life cycle* may not only increase but also accelerate cash flows. Various studies confirm that customers who are satisfied with an existing relationship and have developed a degree of source loyalty are more responsive to the supplier’s marketing efforts. When new products are introduced, they respond by adopting the product more quickly and by taking a more active role in networking, that is, influencing the trial and buying decisions of others [36]. This may result in a *faster market penetration*, which, in turn, leads to accelerated cash flows.

5.3. Reducing cash flow volatility and vulnerability

Stable and satisfying relationships will produce customers who are more committed to the supplier and less vulnerable to competitors’ efforts. The steadiness of cash flows can be supported by the cross-selling of *counter-cyclical* products or services and by *spreading the risk* of fluctuating demand across customers [4]. Customer portfolio management is thus a useful tool for decreasing dependence on single customers and reducing cash flow volatility if it is based on a counter-cyclical composition of the customer base.

5.4. Increasing the residual value of the firm

Size, *quality*, *trust*, *commitment* and *reputation* of the customer base are also relevant to the growth potential of a relationship. Customers with a large growth potential have a higher impact on the residual value of the firm and hence on its shareholder value than customers who are only occasional cross-buyers.

6. Networking potential and shareholder value

6.1. Increasing cash flow

Additional revenues may be derived from referrals and/or from a customer's reputation. Referrals might lead to *additional sales* and *lower acquisition costs* as new customers are attracted through word-of-mouth advertising. They make advertising and promotion more effective by relaying their favourable attitude towards the firm's communication to potential new customers. A customer who is regarded as opinion leader in an industry or a market segment constitutes a particularly valuable source of reputation for the supplier. Thus, exploiting a customer's networking potential means increasing cash flow. The word-of-mouth value of a customer is a function of the specific industry referral rate, his role as influencer, the size and density of his (social) network, and his satisfaction with the ongoing relationship [37]. These differences have to be taken into consideration in estimating the customer value.

6.2. Accelerating cash flow

The above points also result in an acceleration of cash flows. If a potential customer, for instance, relies on referrals from people he trusts, his *decision-making process* will be *simpler* and *faster*. Market penetration will be accelerated, too, as referrals and reputation complement and support marketing efforts. As a consequence, potential customers will *test* and *adopt* new products *at a faster rate*.

6.3. Reducing cash flow volatility and vulnerability

Referrals from a customer with a positive reputation may *strengthen the loyalty* of other customers. If customers can rely on the positive long-term experience of others, they will perceive the supplier as more reliable and trustworthy. Trust has been conceptualized as a precursor of commitment [12,38]. Commitment, in turn, is central to the establishment, development and maintenance of long-term relationships. It has been defined as "... an exchange partner believing that an ongoing relationship with another is so important as to warrant maximum efforts at maintaining it; that is, the committed party believes the relationship is worth working on to ensure that it endures indefinitely" [12].

Commitment and trust are essential to relationships as they encourage exchange partners (1) to maintain relationships and cooperate, (2) to stand firm against short-term alternatives in order to take advantage of long-term benefits and (3) to view potentially high-risk actions as being prudent, assuming that opportunistic behavior of the exchange partner is not likely to occur [12]. Commitment and trust thus lead directly to lower vulnerability and volatility of cash flow.

Referrals and reputation of other customers result in a *reduction of postpurchase cognitive dissonances* since they help to confirm or even reinforce a purchase decision. Customers will therefore be less vulnerable to competitive actions and their share of wallet will be more stable.

6.4. Increasing the residual value of the firm

According to the resource-based view of the firm, resources and capabilities are a source of sustainable economic rent when (1) they are difficult to buy, sell, imitate or find a substitute for, (2) when they prove complementary in deployment or application and (3) when they are firm specific, durable and scarce [30]. The networking potential of a firm's customer base satisfies these requirements. Its precursors are trust and commitment, and it is an intangible asset that evolves slowly over time. The networking potential cannot be traded or easily replicated by competitors; it is complementary in the sense that it makes marketing efforts more effective. The trust, commitment and reputation of customers who are the source of referrals have an effect on the enhancement, acceleration and stability of cash flows. As they are undoubtedly long-term intangible assets, they contribute to the residual value of the firm.

7. Learning potential and shareholder value

7.1. Increasing cash flow

Knowledge creation through a customer relationship is the fourth component of customer value. The learning potential can be defined for our purposes as all meaningful information that is generated by a customer relationship, such as the product's true performance, the customer's latent and overt needs, the competitors' capabilities and strategies, technological trends and so on. Information generated by a customer relationship can boost *product and process improvements and innovations* and therefore increase efficiency and quality. It reduces uncertainty so that resources can be allocated more *efficiently* and *effectively* with a positive effect on cash flow.

Techniques that are based on close cooperation with customers, such as the Lead User concept [39], Quality Function Deployment (QFD) [40], Efficient Consumer Response [41] or "customer visits" [42] provide valuable information on the needs, problems or defects related to products or services. This may result in fewer design changes in the product development stage, lower startup costs and higher success rates. The same holds true for process improvements, which can then be transferred to other customers, thus reducing relationship costs.

7.2. Accelerating cash flow

Learning through and within a particular relationship can also contribute to faster cash flows. Information about markets that is more reliable and available earlier may *accelerate product development and market penetration*. The right input eliminates or reduces false starts and delays in the conceptualization, specification and prototyping of customer solutions [4]. Here again, lead users are especially valuable. Because they are very demanding and, as advanced customers, ahead of the majority of others, integrating them into product development may prove successful in accelerating and improving product development. As future market needs are identified earlier and more accurately, suppliers can expect faster market penetration and earlier cash flows.

7.3. Reducing cash flow volatility and vulnerability

A systematic exploitation of the learning potential enriches a company's market intelligence. *Forecasts* and

plans will be more *reliable* with less guesswork. The company can respond more adequately to changing needs, competitors' strategies and new environmental conditions. Cash flow vulnerability and volatility will decrease to the benefit of a higher shareholder value.

7.4. Increasing the residual value of the firm

There are two forms of market-based assets: *relational* and *intellectual* assets [3]. Relational assets are outcomes of a firm's relationship with stakeholders. Intellectual assets are a company's body of knowledge about present and future markets and the stakeholders [43]. Both resources are interdependent as they evolve through interaction. The more sophisticated and intimate the firm's relationships are, the more knowledge it can acquire. Different types of knowledge, such as market conditions (competitors, customers, channels, suppliers, social and political interest groups, etc.), technologies and business processes, or future market trends can be developed, tested and refined [3].

Table 1
Customer lifetime value and shareholder value: a framework for analysis

	Base potential	Growth potential	Networking potential	Learning potential
Increasing cash flow	<ul style="list-style-type: none"> • Sales volume <ul style="list-style-type: none"> – Unit sales per period – Time horizon of relationship • Price <ul style="list-style-type: none"> – Customers' bargaining power – Price sensitivity • Acquisition costs <ul style="list-style-type: none"> – Customers' awareness and attitudes – Competitors' dissatisfied customers – Relationship termination costs – Quasi-monopolistic position • Relationship costs <ul style="list-style-type: none"> – Scale economies – Experience curve • Retention costs 	<ul style="list-style-type: none"> • Acquisition, relationship and retention costs • Size of extension and expansion potential <ul style="list-style-type: none"> – Trust – Synergies – Strategic considerations 	<ul style="list-style-type: none"> • Referrals, word-of-mouth advertising, and customer's reputation <ul style="list-style-type: none"> – New relationships – Additional sales • Lower acquisition, and relationship and retention costs 	<ul style="list-style-type: none"> • Product and process improvement and innovation • Market intelligence reduces uncertainty <ul style="list-style-type: none"> – Efficient resource allocation
Accelerating cash flow	<ul style="list-style-type: none"> • Accelerated and improved product development <ul style="list-style-type: none"> – Integration of demanding and knowledgeable customers • Supply chain management • Higher market responsiveness <ul style="list-style-type: none"> – Innovators and early adopters – Customers' awareness and attitudes 	<ul style="list-style-type: none"> • Faster market penetration <ul style="list-style-type: none"> – Cross-selling – Uptrading • Increase in share of wallet <ul style="list-style-type: none"> – Move into the next phase of customer life cycle 	<ul style="list-style-type: none"> • Simpler and faster decision making process • Faster product trial • Quicker adoption of new products 	<ul style="list-style-type: none"> • Faster product development • Faster market penetration
Reducing cash flow volatility and vulnerability	<ul style="list-style-type: none"> • Macroenvironmental sources of risks • Industry-based sources of risks • Fir-related sources of risks • "Share-of-wallet" risks 	<ul style="list-style-type: none"> • Counter-cyclical cross-selling • Spreading risks across customers 	<ul style="list-style-type: none"> • Strengthen other customers' loyalty • Reduce postpurchase cognitive dissonance 	<ul style="list-style-type: none"> • Reliable forecasts and plans
Increasing the residual value of the firm	<ul style="list-style-type: none"> • Sustainability of customer base <ul style="list-style-type: none"> – Size and quality – Trust – Commitment – Reputation 	<ul style="list-style-type: none"> • Sustainability of extension and expansion potential <ul style="list-style-type: none"> – Size and quality – Trust – Commitment – Reputation 	<ul style="list-style-type: none"> • Trust, commitment and reputation of sources of referrals 	<ul style="list-style-type: none"> • Amount and usability of relational and intellectual assets

Intelligence that is generated from customer relationships can be unique as it may include facts, perceptions, beliefs, assumptions or projections that may not be generated elsewhere. Therefore, its continuous generation is a possible source not only of competitive advantage but also of future cash flow streams reflected in the residual value of the supplying company (Table 1).

8. Implications for the measurement of CLV in the business-to-business sector

For the purpose of assessing CLV, Berger and Nasr [14] present a series of models with numerical examples of various situations. In industrial marketing, however, a distinction must be made between two groups of buyers: the “lost-for-good” and the “always-a-share” buyers [35]. Based on this taxonomy, Dwyer et al. [29] develops two models to calculate CLV. In the “lost-for-good” situation, where a customer is either totally committed to the vendor or totally lost, retention rates are estimated based on historical data, which then are used to predict cash flow streams. In the “always-a-share” situation, customers can easily experiment with and switch to new vendors. In each period, customers can give any vendor a portion of their business. In this case, both the probability of repurchase and the level of purchases have to be estimated. Recent purchases are used to predict repeat purchase behavior. These approaches have several shortcomings. Firstly, they require historical data to predict future behavior; as a result, they cannot be applied to new relationships. Secondly, historical data may not accurately reflect future

behavior. Thirdly, these approaches neglect the growth, networking and learning potential that a customer relationship may offer.

The following example is presented in order to illustrate both the possibilities and limitations of measuring CLV in the business-to-business sector: A manufacturer of industrial goods has just concluded negotiations with a potential customer who is one of the leading suppliers of his industry. The manufacturer now has to decide whether or not he should enter into a 5-year contract. For this purpose, he collects a whole range of facts and assumptions that enable him to calculate the cash flows and NPV for each of the four components of CLV, namely base potential, growth potential, networking potential and learning potential (see the model in Fig. 4).

9. NPV of base potential

The contract, drafted for internal discussions, is based on an annual sales volume of 9500 units. The negotiated price per unit is 1000 euros, with the customer insisting on an annual price reduction of 5% in each of the 4 years to follow. The customer argues that the size of the contract would yield considerable experience effects (the manufacturer would apply a relatively new production technology), as well as scale effects (the sales contract would help raise the capacity utilization of the plant), thus justifying price reductions of this magnitude. The manufacturer expects costs for presales service of 2,150,000 euros, mainly for technological and organizational adaptations. The macroeconomic factors are favorable, the

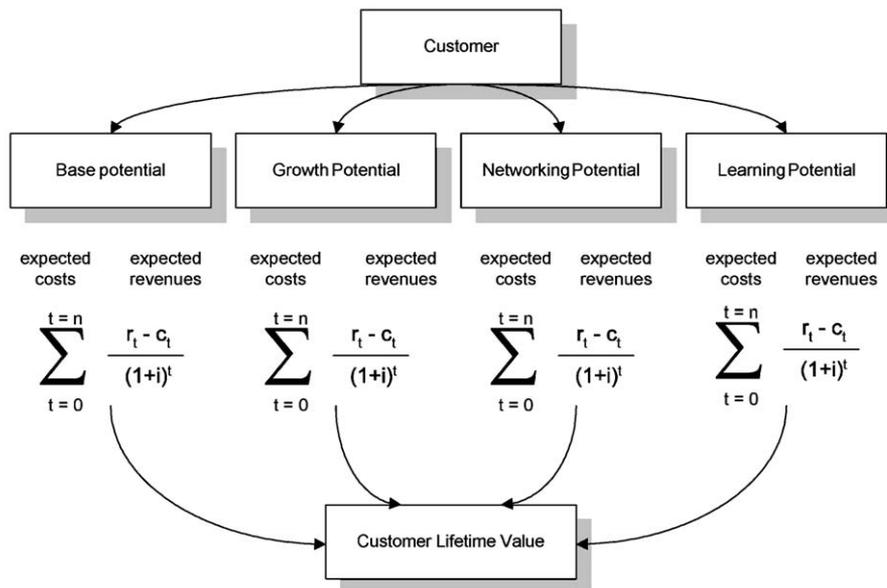


Fig. 4. Measurement of CLV.

industry risks moderate, and the customer's overall reputation above average. On the basis of this information, entering into a long-term relationship with this particular customer is quite attractive. The cash flow generated from the base potential over the 5-year period of the contract would amount to 288,990 euros. Applying a discount rate of 10.0%, however, the NPV would be negative, that is, –18,995 euros. This means that judging by the base potential alone, it would be unwise to enter into a long-term contract with this customer.

10. NPV of growth potential

Generally, two major sources of growth may increase the CLV:

1. an increase of sales volume of the base potential due to industry and customer growth or an increase of the share of wallet (penetration value) and
2. an extension of the customer relationship beyond the base potential (cross-selling).

First, industry and customer growth rates have to be estimated. External data such as industry forecasts, competitor analyses and market share projections are helpful in carrying out this task. The accuracy of the valuation of the growth potential depends on the quality of this data. Second, the penetration value and the cross-selling potential must be assessed. They basically depend on three factors [44]:

1. the technical characteristics of the product system, such as modular configuration, complementary products, spare and wear parts,
2. the customers' level of satisfaction and the suppliers' competence and trustworthiness and
3. customers' unsatisfied needs.

The valuation of these factors, of course, is a very difficult and often subjective task. In most cases, it can only be based on experience and rough estimates. Business-to-business relationships are characterized by the interaction of many individuals at different levels; thus, information on technical requirements, customer satisfaction, unsatisfied needs and so on is dispersed throughout the organization. Therefore, such evaluations should involve individuals from different functions [45] who are best able to accurately assess the growth potential.

In our case, industry forecasts indicate an annual growth rate of roughly 5%. Assuming (a) that the customer will retain his market share, (b) that a long-term contract would help the manufacturer realizing economies of scope of, say, 10% of the base potential revenue and (c) that the customer-specific adaptation costs for the additional sales volume would be on the order of 300,000 euros, the total growth potential of the customer would yield a cash flow of

200,354 euros or, on the assumption of a 10% discount rate, the NPV would amount to 140,412 euros. Hence, taking the opportunities for growth into account, a long-term contract looks much more attractive.

11. NPV of networking potential

The networking potential of a customer relationship is a function of

1. the customers' level of opinion leadership and "reference network,"
2. the importance of referrals in other customers' decision making and
3. the customers' satisfaction and willingness to recommend the supplier to others [44].

To value the NPV of the networking potential, the number of new customers acquired through referrals and recommendations and the average profitability of each have to be assessed. Jacobs et al. [46] present a theoretical model for calculating the NPV of a customer relationship, which is assumed to consist of the NPV of cash flows from (1) retaining customers and from (2) expanding the "customer pool" through referrals and recommendations. In their model, a customer's ability to "communicate" depends on his level of satisfaction in the prior period: The higher the customer's satisfaction, the higher the networking potential. Of course, the measurement of the networking potential is a challenging task because it is very difficult to obtain the data needed. Historical measures of customer-to-customer referrals, the analysis of how new customers are acquired and determining whether they are influenced by referrals and recommendations are essential to any assessment of the networking potential [46].

Since the customer under scrutiny may be viewed as a market and technological leader, it can also be assumed that he will play an active role in the relevant industry networks. Referrals, word-of-mouth advertising and, quite generally, positive reputation effects could thus result in additional sales for the manufacturer. When experienced sales persons were asked (individually, in order to avoid "group think") to express these network effects in tangible figures, they estimated the networking at 5% of base potential, with an annual increase of 25%. Marketing costs were assumed to be negligible, and the necessary adaptation costs were estimated at 5% of additional revenue. The NPV of the networking potential thus amounts to 107,780 euros.

12. NPV of learning potential

The assessment of the learning potential is a challenging task as it is extremely difficult to predict and to measure

Table 2
NPC of CLV

	<i>t</i> =0	<i>t</i> =1	<i>t</i> =2	<i>t</i> =3	<i>t</i> =4	Sum
<i>Base potential</i>						
Total revenue	9,500,000	9,025,000	8,573,750	8,145,063	7,737,809	42,981,622
Acquisition/adaptation costs	2,150,000					2,150,000
Variable costs	6,175,000	5,415,000	5,144,250	4,887,038	4,642,686	26,263,973
Fixed costs	2,755,000	2,810,100	2,866,302	2,923,628	2,923,629	14,278,659
Cash flow	– 1,580,000	799,900	563,198	334,397	171,495	288,990
NPV	– 1,580,000	727,182	465,453	251,237	117,133	– 18,995
<i>Growth potential</i>						
Total revenue		1,353,750	1,286,063	1,221,759	1,160,671	5,022,243
Acquisition/adaptation costs		300,000				300,000
Variable costs		812,250	771,638	733,056	696,403	3,013,346
Fixed costs		350,000	367,500	385,875	405,169	1,508,544
Cash flow		– 108,500	146,925	102,829	59,100	200,354
NPV		– 98,636	121,426	77,257	40,366	140,412
<i>Networking potential</i>						
Total revenue		475,000	593,750	742,188	927,734	2,738,672
Acquisition/adaptation costs		23,750	29,688	37,109	46,387	136,934
Variable costs		308,750	385,938	482,422	603,027	1,780,137
Fixed costs		155,000	162,750	170,888	179,432	668,069
Cash flow		– 12,500	15,375	51,769	98,888	153,532
NPV		– 11,364	12,707	38,895	67,542	107,780
<i>Learning potential</i>						
Net revenue impact	– 50,000	20,000	25,000	35,000	35,000	65,000
NPV	– 50,000	18,182	20,661	26,296	23,905	39,044
NPV of CLV						268,241

process and product improvements resulting from a customer relationship. Hogan [45] proposes a methodology that relies on qualitative research techniques to gather data on the relationship. It is crucial to involve all the individuals in the organization who are able to provide accurate information (e.g. costs, benefits) on the relationship. Based on this information, the NPV of the expected relationship value is calculated as a probability distribution using a Monte Carlo simulation. This approach is theoretically elegant; its application, however, is rather time consuming for our purposes. Therefore, a similar but more conventional approach has been taken.

The manufacturer expects learning effects from customer integration (above all from the target costing initiated by the customer) and from an improved JIT program. In a first step, experts within the firm were identified in order to gauge the benefits and costs of customer integration and JIT. Typical effects from the former are lower routine costs, for example, when trust replaces control procedures and formal rules. Effects from JIT are, for example, time savings for engineering, administrative and management tasks, as well as lower costs for out-of-stock, IT and inventory slack. The sunk costs for this learning program are estimated at approximately 50,000 euros. The net effects of the learning potential, expressed as additional revenue, are expected to reach 35,000 euros toward the end of the contract (see also Table 2).

In this case, taking all four components of NPV into account, the total NPV would amount to 268,241 euros, which clearly supports entering into a long-term relationship with the customer. The various estimates and assumptions are, however, merely the components of one possible scenario. It is advisable to construct various scenarios and to simulate the effects of different assumptions and estimates on the components and the total NPV. In doing so, it will become obvious how vulnerable or, alternatively, how robust the assumptions of growth, networking and learning effects really are.

13. Conclusion

A framework was developed to analyze the relationship between customer lifetime value and shareholder value. It is based on four processes that drive shareholder value, namely (1) increasing cash flow, (2) accelerating cash flow, (3) reducing cash flow volatility and vulnerability and (4) increasing the residual value of the firm. It has been shown how the four components of customer lifetime value are related to these drivers. As this relationship is fairly complex, only the most important linkages have been analyzed. The intention was to present a framework for analysis rather than an exhaustive assessment of all the linkages. It is obvious that customers differ in their contribution to share-

holder value. The framework developed in this paper should be seen as a practical approach to shareholder-value-based customer valuation. It allows marketing practitioners to allocate resources in a way that is more shareholder value oriented than traditional methods.

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