CUSTOMER VALUE MEASUREMENT WORKING PARTY

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SUMMARY

Customer Value Measurement ("CVM") is widely used across a number of industries including financial services industries. However even within a single company it finds diverse and sometimes inconsistent applications across or even within individual departments. In addition most approaches have concentrated on spot values and have not considered the impact of volatility. Actuarial involvement has been somewhat limited to date. A CVM represents an area of opportunity for actuaries.

This paper sets out the range of approaches taken to Customer Relationship Management. Customer value is investigated from the points of view of shareholders, of management and of customers themselves. CVM is discussed within the framework of a Control Cycle. The range of strategies and outcomes that may be developed within the CVM framework are discussed. The methodologies for measuring value are delineated and a critique is given of the strengths, weaknesses, opportunities and threats of the approach. A discussion is given of the parties involved in making CVM work and how CVM relates to processes currently carried out within insurance companies and of pricing, marketing and underwriting in particular. The CVM approach is exemplified at the level of individual customers for single peril Travel Insurance product differentiated by customer type. The approach is also exemplified by a simulation approach where the impact of different strategies is tracked in terms of their effect on different measure of customer value. A range of wider issues is discussed around brokers, channels, analysts, consumer groups, the press, the FSA and regulators. A brief literature review is presented.

KEYWORDS: Customer, Value, Control Cycle, Segmentation, Relationship, Shareholder

TABLE OF CONTENTS

1. INTRODUCTION

The Working Party was set up to review and critically appraise current practice in Customer Value Measurement ("CVM"). It has also sought to assess the opportunities for the profession to contribute to work in the area.

In setting up the Working Party three questions were foremost in our minds:

- How does current practice in insurance set relative to CVM?
- With all the potential for value being counted in different part of organisations and across different years, is CVM just an excuse for losing money on innately unprofitable products?
- And finally how does CVM change depending on who is interested in measuring value.

The report summarises the output of the Working Party and aims to be informative as much as to provide a platform for debate of the approach. It is envisaged that this report should also form the basis for further work.

2. EXECUTIVE SUMMARY AND RECOMMENDATIONS

The paper sets out the range of approaches taken to CVM. Customer value is investigated from the points of view of shareholders, of management and of customers themselves. CVM is discussed within the framework of a Control Cycle. The range of strategies and outcomes that may be developed within the CVM framework are discussed. The methodologies for measuring value are delineated and a critique is given of the strengths, weaknesses, opportunities and threats of the approach. A discussion is given of the parties involved in making CVM work and how CVM relates to processes currently carried out within insurance companies and of pricing, marketing and underwriting in particular. The CVM approach is exemplified at the level of individual customers for single peril Travel Insurance product differentiated by customer type. The approach is also exemplified by a simulation approach where the impact of different strategies is tracked in terms of their effect on different measure of customer value. A range of wider issues is discussed around brokers, channels, analysts, consumer groups, the press, the FSA and regulators. A brief literature review is presented.

CVM is widely used across a number of industries including financial services industries. It has important applications in the definition of company strategy and tactics particularly in relation to Customer Relationship Management. The methodologies can be complex and even within a single company it finds diverse and sometimes inconsistent applications across or even within individual departments. In addition most approaches have concentrated on spot values and have not considered the impact of volatility. Actuarial involvement has been somewhat limited to date. The area of CVM is one of opportunity for actuaries.

Although companies are investing a lot in Customer Relationship Management, the supporting CVM and the methodologies are far from optimal. In particular the analytical elements have been somewhat sparse.

There is clearly scope for actuaries both as members of the profession and within their companies to contribute to research into Customer Value, and the application of this research could present actuaries with new ways of adding value.

Although most concepts have been developed in the report for Personal Lines, we believe that they will be applicable in the Commercial Lines environment.

The work of the Working Party has been compromised by the usual restrictions on time and by the commercial sensitivity of the area. The latter issue has meant that most discussion has been general rather than specific and that data has been simulated rather than real.

It is recommended that work should continue in this area going forward. The following areas have been identified for further research:

- Further assessment of Customer Value from the perspective of the policyholder;

- Investigation of portfolio simulation to determine the value of broker or company portfolios stochastically e.g. broker or company view to determine value of portfolio stochastically;
- Comparison of financial services and insurance with other industries;
- Investigation of the relationship between CVM and Utility pricing;
- Definition of how strategy and tactics may be formulated in a CVM context.

3.   WHAT IS CUSTOMER VALUE?

Within any organisation, including insurers, customer value is a key concern for the following groups:

- Its shareholders or owners
- Its customers (which might include intermediaries)
- Its management

Customer value will mean different things to each of these three major groupings. For example, for shareholders it might well mean the value that customers, or particular customer segments, have added to their business and could add in the future. The customers themselves might regard "customer value" to be the value that they, as consumers, derive from the organisations various products and services. And the view of management might well cover both angles, to differing degrees depending on the particular accountabilities of individual managers. Alternatively, and more likely, the view of management will be driven by how they themselves are assessed with regard to performance and bonus. The extent to which management bonus measures are aligned to either the perspective of the customer or to that of the shareholder, or otherwise, and the timescales over which they operate, will strongly influence where management sits in the spectrum. In the case of a mutual company, the perspectives of the owners and the policyholders should be aligned. However, management behaviour may still be driven by bonus structures, which themselves may not be perfectly aligned to the interests of the policyholders.

Sub-sets within the groupings might also perceive value differently from other sub-sets. For example, within insurance one customer segment might view the quality of the insurer's administrative services as important, whereas another might have very little interest in that aspect providing the insurer is offering the lowest premium.

Likewise a single customer segment may be viewed and valued differently by different parties within a company. For example, Underwriting and Marketing may view the value of the student customer segment quite differently!

Considerations of value underlie most decision-making. Like many businesses, insurance revolves around customers and hence most insurance-related decisions are, or at least should be, based upon perceived customer value, using whatever definition is appropriate to those making the decisions.

Measuring customer value and implementing a strategy based on customer value can allow companies to optimise the profit generated by policyholders. Understanding customer value from the policyholder's point of view can also allow the company to optimise the perceived value of the products offered. This may not be in conflict with the first point, at least not in the long term. From the point of view of a mutual company, the criteria may not be profit, it may be the contribution to fixed expenses.

Distribution has an impact on the Control Cycle. Thus the Control Cycle of an insurance company and a broker might be expected to operate quite differently.

The insurance industry exhibits a degree of short-termism which contributes to the extent of the underwriting cycle. Measuring and understanding customer value would help flatten the cycle.

Measurement, whether implicit or explicit, of customer value, whether by the company, its management, the broker or the customer, forms part of most decision-making processes within insurance. This process is dynamic and may be treated as a control cycle.

The following diagrams set out these processes, first from the point of view of the company and management and then from the point of view of the customer.

Control Cycle – Company & Management

Collect Data

Measure Customer Value

Monitor customer behaviour

Implement strategy

Determine strategy
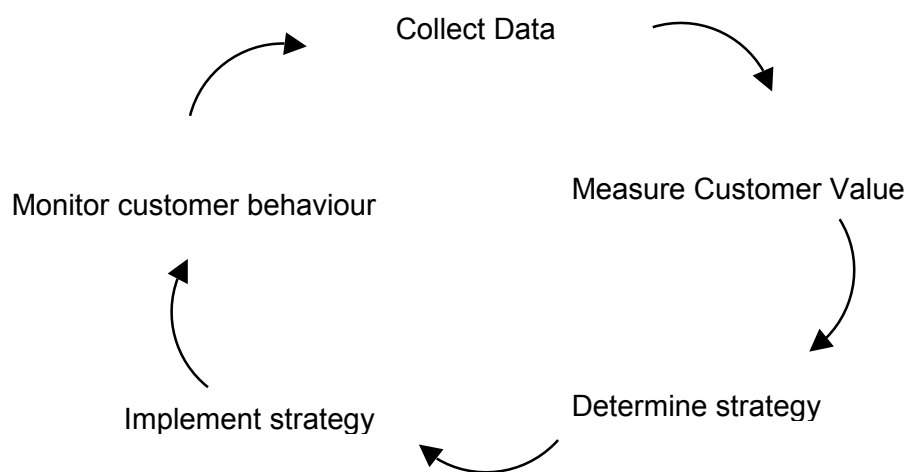
Company strategy should be determined in full awareness of the impact that the strategy will have on customer behaviour. The ways in which customer behaviour may be influenced are discussed in the section on Implementation.

Control Cycle - Customer Model

Assess market, channels etc

Measure Customer Value

Monitor experience

Determine criteria for action

Choose insurer/cover
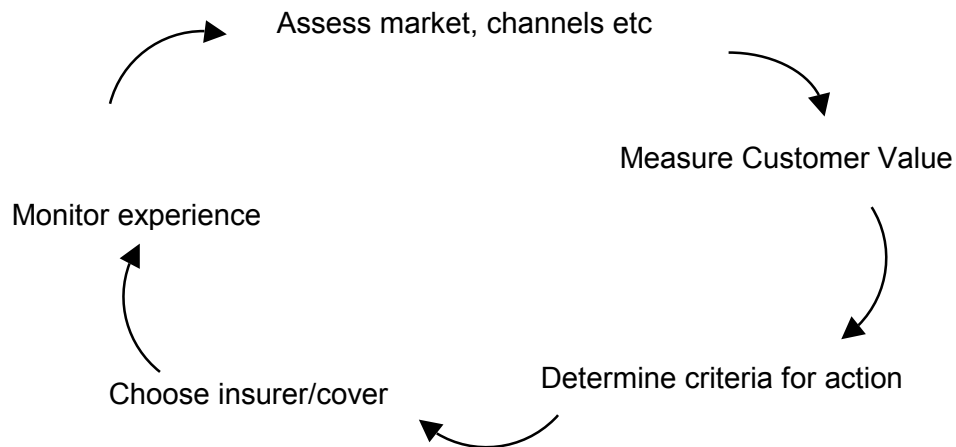
For compulsory insurance covers (e.g. motor insurance), the customer decision is of insurer. For non-compulsory insurance purchases, it is a question first of whether or not to buy a particular cover, and only then of which insurer.

The structural similarity between the two Control Cycles is startling.

The success of company strategy will depend critically on how it is aligned with the decision making process of the customer. Although the control cycles differ in the detail of how individual processes such as data collection are carried out, they are identical in their structure.

The success of a company may in part be driven by how advanced its cycle is relative to the equivalent customer cycle – success being judged in terms of how a company wishes to measure it, be it profitability or customer championing or other.

Given that customers and companies and management may measure value in different ways, there is scope for the relationships between the different parties to be symbiotic. This is explored in the next section as possible measures of value are evaluated.

4. HOW DO WE MEASURE CUSTOMER VALUE?

4.1 The Measures

For each different interpretation of what constitutes "customer value", a different measurement of that value will apply. The following table summarises different measures of customer value within insurance that might be of interest to the different parties. The list is not exhaustive. Indeed, there will be as many measures of value as there are interested parties. Stakeholders who have not been considered could include various company departments (e.g. Information Technology, Underwriting, etc.). We have sought only to develop a high level list – one which would most likely be of interest to the CEO, for example, from the company perspective.

	Measures of Customer Value	Shareholder	Management	Policyholder
1.	The present value of future profits	✓	✓	
2.	Historic profits	✓	✓	
3.	The required target profit minus the emerged profit	✓	✓	
4.	The past profit plus the expected future profit, possibly with a credibility weighting	✓	✓	
5.	The number of claims		✓	✓
6.	The total claims payment minus the premium on an undiscounted basis			✓
7.	The total claims payment minus the premium on a discounted basis			✓
8.	The contribution to fixed expenses (Mutual Company)		✓	✓
9.	Gross premium		✓	
10.	The quality of service			✓
11.	The absolute retention rate	✓	✓	
12.	The retention rate relative to the market	✓	✓	

	Measures of Customer Value	Shareholder	Management	Policyholder
13.	The financial strength of the organisation			✓
14.	The expense ratio	✓	✓	✓
15.	The profit margin plus expense ration	✓	✓	✓
16.	The profit plus expenses divided by the risk premium			✓
17.	The extent of the cover			✓
18.	The marketing spend per policy holder	✓	✓	✓
19.	The inclusiveness of the policy versus the strength of the underwriting restrictions	✓	✓	✓
20.	The number of products held	✓	✓	✓
21.	The reduction in volatility of outgoings			✓
22.	The truest risk premium			✓
23.	The greatest risk/cross subsidy			✓
24.	The availability of cover			✓
25.	Peace of mind			✓
26.	Affordability and fairness			✓
27.	Competitiveness			✓
28.	Brand value	✓	✓	✓

It should be noted that many of the measures that are of interest to customers differ from those of interest to shareholders. This provides an opportunity for both sides to derive value from the same enterprise.

Company strategy may be aligned with customer behaviour in such a way as to maximise such potential synergies. In an efficient market, there is an inevitable need to align the two Control Cycles. In an inefficient market environment, management and customers will be forced to make decision on very partial information. Clear CVM can assist in this decision-making process.

Looking at some of these measures in turn, the Present Value of Future Profit can be calculated on a number of different bases according to the number of years' business taken into account, the number of products taken into account and the number of channels taken into account. The simplest basis would be to consider just a single year's business, a single product and a single channel. The complexity and a potential value of CVM increases as more of these factors are taken into account. In all customer management based on the measurement of customer value, a balance needs to be obtained between acquisition and retention. The balance appropriate at any particular point in time will be a function of the underwriting cycle. A potential benefit of CVM is to determine that balance most appropriate to the point in the cycle. This emphasises the dynamic nature of customer value and the importance of volatility measures.

The balance between Total Claims Payment and Premium may be complicated somewhat by the pricing of policies where policy structures have No Claims Discounts or additional pricing elements based on an individual policyholder's claims experience. In all these cases, there will not be a non-trivial relationship between claims payments and premium.

The **marketing spend per policyholder** may be an interesting measurement for a number of reasons. From the point of view of the customer, the greater the marketing spend the greater the potential kudos that the product may have for the customer and the greater the perceived value. From the point of view of the shareholder, marketing spend can increase the goodwill value of a company over and above the direct effect on the products mentioned in the marketing through higher brand awareness. However, ineffective marketing can however have the opposite effect and destroy value.

From the organisation's point of view we can quantify value measures. We now look at a number of ways of establishing measures of value from the perspective of the customer.

Current methods include:

- Retention/conversion/secondary sales.
- Customer satisfaction surveys.
- Focus groups.
- Polling (e.g. MORI).
- Objective service measures. Distinguishing between Sales, Service and Claims can help highlight areas of development. In general a 5 point scale, as adopted by the ABI (i.e. Very Unsatisfactory/ Unsatisfactory/Neutral/Satisfactory/Very Satisfactory) is the industry standard.
- Industry benchmarks (e.g. extent of cover as indicated by Aquous).
- Broker satisfaction with company.
- Market level of rates (e.g. top quartile).
- Complaint levels.
- Press references (positive and negative).
- The success of Member gets member schemes indicating customer satisfaction.

In Appendix A we have broken down the different value measures into several groups. The groups are Financials, Product, Customer, Company and Distribution. Value measures have been assigned to groups as and where they are relevant. The groups and subsets are described below.

Financials

Past claim experience: This is the historic claim frequency, severity, loss ratio, etc. If it is only used to the extent to which it explains future claim experience, it is not considered here.

Prospective claim experience: This is a prediction of future performance, measured by claim frequency, severity, loss ratio, etc.

Customer retention: A prediction of future retention of the policyholder.

Historic customer related expenses: This includes expenses, made by the insurer in the past, like acquisition expenses.

Future customer related expenses: These are expenses that the insurer will incur in the future for managing the policyholder. This includes possibly expenses related to retention management and cross-selling.

Cross-selling/up-selling potential: Either the potential revenues, products or profitability is measured that can be achieved through cross-selling or up-selling actions.

Product mix: This serves as an indication if product mix influences the result, either directly or indirectly.

Product

Product definition: Insurance companies compete not just on price, but also on product (among other elements like distribution, service, etc.). Within this heading, we look at how particular product elements may influence the result.

Customer

Customer satisfaction: We want to verify if customer satisfaction influences the particular measurements of customer value. This can be again through direct measures (resulting from e.g. surveys) or indirect measures (resulting from e.g. retention rates).

Customer peace of mind: Does the customer value take into account the peace of mind as perceived by the client?

<u>Company</u>

Company solvency: Customer value can be influenced by the company's solvency, from whichever perspective (policyholder, shareholder, management, etc.).

Company expense structure: It is clear that inefficient processes will increase expenses and thus decrease customer value from a company's perspective. In addition, higher expenses result in higher rates and should decrease customer value from a policyholder's perspective as well unless those higher expenses are delivering genuine value.

<u>Distribution</u>

Distribution channel: Does the distribution channel directly affect the customer value measure?

Some characteristics are wanted in an evaluation process, some are not. Past experience is useful to gain more insight, while future experience is more important for decision-making. We didn't make any judgement in this table about the usefulness of the characteristic in the evaluation methodology. The table is just an indication on how the market is expected to see customer value, not on how the ideal calculation should be.

The matrix also looks ahead toward those applications already identified (Pricing, Underwriting and Marketing) where Customer Value is current used in the industry. The table also presents an indication of how Customer Value can and should be measured, both from a decision-making point of view and for gaining insights.

The table shows the very diverse set of characteristics used in Customer Value. Given this diversity, a comprehensive methodology which takes account of all points of view would be difficult to achieve, and probably not very useful. (See SWOT analysis.) Every solution should be built in view of the intended application.

4.2   Some technical issues

4.2.1   The Choice of Discount Rate

The choice of discount rate can have a crucial role in the relative values ascribed to customers. At a low discount rate, for example, low income but retentive customer may be worth more than a short term high income customer. At a high rate of discount, the reverse will be true.

From the point of view of the shareholders or of management, the rate of discount will be driven by the usual considerations for the organisation as a whole, usually the return on capital. However, different customer segments, channels, product groups, territories, etc. may merit different treatments.

For example, if one particular customer segment is particularly volatile or stable, then it may require special treatment. Possible approaches are to change the rate of discount or to add a capital charge.

4.2.2 Spot Values of Customer Value and Volatility

The measures set out above only allow for a single value to be ascribed to a customer or to a customer segment for each measure of customer value. Particular volatility may, of course, be allowed for within that single value through the choice of discount rate or otherwise. Other approaches are possible and might on occasions be preferable. These could include:

- Using a simulation approach to determine a range of prospective customer values. The output may be represented through an inter-quartile range, or some other metric of variability, in addition to the spot value given by the mean. An example of this approach is shown in the section on Computer Simulation.

- Scenario modelling. Where the variation of concern attaches to particular events, relative customer values may be investigated for each of the relevant scenarios. For example, for an insurer for whom household business is introduced via a mortgage, such a scenario might be a drop in interest rates which may driven the churning of mortgages and therefore of the associated insurance. Decisions and strategies will then be devised in the light of an assessment of the emerging likelihood of these (and other) scenarios.

5. CRITIQUE OF CUSTOMER VALUE MEASUREMENT?

In order to establish an objective view of CVM, we carried out a SWOT analysis. The results of this are summarised below.

CUSTOMER VALUE MEASUREMENT – FROM COMPANY'S POINT OF VIEW

STRENGTHS	WEAKNESSES
- Objectivity & quantitative - Single framework - Considers prospective rather than historic value - Provides better management information - Aid to managing sales/admin functions - Provides insight - Flexible tool that can be applied to a wide range of applications - Can be refined – additional data and methodology can be added in - Makes everyone think about drivers of business and agree on them - Makes use of all available data - Ease of interpretation	- Doesn't allow for unknowns - Complexity - Arbitrary. Although the modelling may be explicit, many of the assumptions are subjective - Systems limitations - Doesn't give strategy - Driven by assumptions / aspirations - Volatility within key assumptions - Quality, completeness of data - Market changes rapidly → model may not follow - Out of line with accounting practice – and strategy is often led by accounting practice - Analysts will not understand or sign up to the measures (cf analysts' positions on the use of embedded values, achieved profits, etc in life insurance) - Do we – as a profession – have adequate modelling capability to be able to do this properly? The profession has historically not been involved in many of the relevant behavioural issues including the public perception of risk

OPPORTUNITIES	THREATS
• Extract profit (subject to accounting rules) • Detection of niches • Upsell/cross-sell strategy • Retention strategy aligned to behaviours • Can align customer satisfactions/investment/ value • Manage brand • PR opportunities • More work for actuaries • The challenges of CVM may provide a driver for the integration of IT systems • Can be used for appraisal/economic value • Strategy setting easier • Possible to produce some sort of stochastic range of values for customer segments	• Commercially driven decisions coming out of CVM may damage the brand • PR risk – perceived inequity in the treatment of the "poor" customer • Doesn't work if behaviours are non-aligned • Data Protection Act. Not all relevant data may be usable for all purposes. • Other potential legal or consumer challenges • Changes in market conditions and practices • Change in social behaviour • Lack of understanding of social behaviours • New entrants with better/new data/stronger brand • Inability of actuaries to communicate • Inadequacy of existing modelling tools • Over reliance. Management may not be sufficiently challenging about the output of the approach • Multiple counting. Elements of profitability may be accounted for more than once in the business (e.g. due to cross sales)

6. HOW DO YOU IMPLEMENT IT?

All companies measure customer value in some way, even if the measurement is crude or implicit. Based on these measurements, decisions are made whether or not a company is aware that this process is being carried out. Having said this, different companies will have different levels of sophistication.

Within an organisation, many different parties will have an interest in customer value. Some of these interests will be conflicting.

- Marketing
- Underwriting
- Pricing
- Management Information
- Broker relationship managers
- Brokers
- Information Technology
- Human resourcing
- Management
- People
- Strategic planning

Historically, much of the development in Customer Relationship Management has been driven by Information Technology at the expense of the real interests of the company or even the customer. The challenge is ensure that IT serves the needs of the business.

For each of these, the view of the customer may itself be broken down by:

- Product
- Channel
- Territory

Having measured customer value, a number of strategies are possible that may differentiate between different customer groups to a variety of extents. These will include the following:

- Changing the price
- Retention management
  - o Service
  - o Communication
  - o Promotional offers/gifts
  - o Loyalty discounts
- Cross-selling and up-selling activity
  - o Loss leaders
  - o Customer selection
- Claims management
- Credit management

- Underwriting

In some cases, there may be an inability or lack of motivation to refresh the risk profile of the policyholder (e.g. changes in marital status, number of children, etc.). In the case of an annualised product, the risk particulars may not be refreshed if a postal invitation to renew is accepted. After a number of years, a variety of factors can contribute to an under-rated premium being charged. An example may be the inclusion of medical cover for children in a policy. If further children are added to the family then the risk profile of the policy increases, with no resultant change in premium. A result of this may be that claim frequency increases with duration. The policy behaves like long term business due to initial underwriting.

The change in profile can clearly go in the reverse sense – but only subject to super-normal retention where the policyholder retains their policy at a premium that is high in relation to their new low risk profile.

7. WHAT WE DO IN INSURANCE TODAY

In this section we focus on the obvious areas in insurance where CVM has been used to date – Pricing, Marketing and Underwriting. In reality, a number of other areas will also be concerned, e.g. Management Information and Premium Collections. However these are not considered in the paper.

7.1 Pricing

One of the key developments in personal lines pricing over the last 20 years has been a move to more individual risk pricing with the advent of better data collection and more advanced IT infrastructure. Pricing models typically include 3 elements: a risk element which deals with the expected cost of claims including claims handling, an expense allocation which will include acquisition and administration costs and a profit loading. These elements are dealt with in turn below, before we consider how a CVM approach might differ from current industry practice with regard to pricing.

7.1.1 Risk

This involves the indentification of key risk factors, or of relevant proxies For many classes of general insurance business, pricing has become highly differentiated according to these. Therefore, in terms of the risk price, the individual characteristics of the customer are taken into account. It may be argued that this is a form of pricing according to the value of the customer. In addition, different charges will be made to the customer according to the specific product and the characteristics of this risk according to the capital change that may be applied to the product. Differing degrees of sophistication will exist in different organisations but some models may include elements of risk based capital allocation.

7.1.2 Expenses

In addition, expense allocation will vary at the very least according to channel with lower expenses typically being allocated to direct sales channels both in terms of administration and more specially in terms of acquisition expense. As such, customers may be treated differently according to the channel through which they are introduced. Furthermore, regardless of the channel, specific customer groups may be treated differently according to their retention behaviour. For those customers who are more loyal to the company, the acquisition cost is in some companies spread over a longer period of time than for those customers who show lapse behaviour.

7.1.3 Profit

As far as the profit allocation to individual customers is concerned, different companies employ different strategies. Certain companies may seek to reward loyalty and therefore extract lower levels of profit from those policyholders who have a propensity to show higher retention levels. Others, on the other hand, may seek to exploit the price elasticity curve; extracting higher margin from the customers who

are less likely to withdraw. The purpose of this paper is not to judge the rectitude or otherwise of any particular approach. The intent is simply to draw attention to the range of possible practices. Profit loadings will also take account of the competitive state of the market.

Depending on the sophistication of any profit model, the loading may also include a required return on capital.

In addition, the use of no claims discounts ("NCD") and loyalty discounts as well as marketing discounts constitute a form of relationship management which is practised within the pricing arena. Different companies may have different practices with regard to these discounts, reflecting company structure as much as any theoretical view. They may either not be treated explicitly (i.e. be given without any supporting financial analysis), treated as part of the risk structure (for NCD only), built into the profit loading or treated as an acquisition expense and therefore dealt with in the expense model.

7.1.4   The Customer Value Measurement Approach

The pricing methodologies prevalent in the industry may already be regarded as being based on CVM.

The particular elements that may be drawn out are the identification of profit, charge for capital and the modelling of retention behaviour. What pricing does not do implicitly, however, is to provide a strategy over a number of years. As there is recourse to price changes each year, it has on occasions been argued that any strategy is unnecessary, particularly given the continuous evolution of the competitive state of the market. Such a pure pricing approach does not, however, give any framework within which to support or to reject any discount strategy. The CVM approach can guarantee consistency and, as such, increase customer and broker satisfaction.

7.2   Marketing

In this section, we describe the main functions of a marketing department in a typical insurance company. For each function considered, we evaluate the extent to which customer value is considered. Some of the functions mentioned might not belong (partially or completely) to the traditional marketing functions, but are included anyway in an attempt to be complete. We will not discuss the definition of customer (policyholder, group of policyholders, family, broker).

Function	Customer Value Characteristics
1. Advertising	Definition of target group considers mainly cross- and up-selling potential. Niche players consider their targeted niche to be of higher value. Distribution channel is an important factor of advertising as well. The effectiveness of advertising campaigns is tracked, by evaluating response and sales. This implicitly considers certain aspects of customer satisfaction. New campaign management approaches are starting to measure the monetary value of advertising.
2. Promotion	Targeted mailings, calls and emails are being applied more frequently these days. Mass marketing is rapidly disappearing in the insurance industry. Targets are set mainly by predicted response rates and less based on risk profiles.
3. Sales	Premium volumes measure sales. The success of sales will depend on other elements mentioned in this table. Prospecting is an important aspect of the sales process, and mainly relying on the availability of external data. This can be limited to names, addresses and some other basic information (like availability of a car in the household). Conversion rates are closely watched by direct insurers, and will influence pricing.
4. Product definition	Gap analysis should drive product definition. Elements considered are customers' peace of mind, profitability (with all its components), cross- and up-selling potential (and as a consequence future retention), company solvability, competitiveness, availability of cover, affordability and potential market size.
5. Retention management	In many cases, the renewal process is an automatic process without much customisation. Some companies might go a step further (mainly direct companies), and consider future retention rates and product profitability. The measures used in retention management might influence pricing.

Function	Customer Value Characteristics
6. Cross- and up-selling	Cross- and up-selling potential is mainly based on the evaluation through rules of potential customer needs. This is in many cases based on rudimentary internal or external data and current product mix. Some companies might go a step further (mainly direct companies), and consider cross- and up-selling likelihood and product profitability.
7. Distribution Management	Partnerships are one way to manage brokers. Broker evaluation is mainly based on sales volumes and past profitability. Commissions can be used to manage distribution more effectively for cross- or up-selling or retention purposes. Triggers are customer potential and profitability (per broker). The distribution has a strong influence on the product development, and broker satisfaction is an important input to the design and evaluation of processes, service and customer profitability.
8. Pricing	Risk based pricing and market pricing are two sides of one coin. The competitiveness of pricing is being compared between "relevant" companies. Loyalty discounts, initial discounts and smoothing of rating structures are just a few of the techniques applied by marketing in pricing.
9. Competitive analysis	Insurance companies are analysed based on their growth rates, profitability, solvability, processes and customer satisfaction (measured by conversion and cancellation rates per company). Products are being compared.
10. Customer analysis	Marketing departments undertake different types of modelling: Traditionally, they performed profiling exercises ("affluent people", "baby boomers", "empty nesters", etc.) by using clustering techniques. These were applied in most of the applications mentioned within this table. They are beginning to use also regression analysis with limited success.

Many of the above metrics may be defined as Customer Value. However, a recurrent theme in the Marketing area is the lack of use of hard financial measures. This said, Customer Relationship Management tools are, however, beginning to include elements of allocation of value to different customer segments, but nonetheless remain too driven by Information Technology.

7.3 Underwriting

Underwriting has long been key to insurance in terms of the selection of risks which will be covered by the insurer. Typically, underwriting will take place at 3 stages: at the selection of the risk at an initial assessment, and at review of the risk at policy renewal, and less commonly in Personal Lines, at the claim stage. The decisions that have traditionally been taken out of the underwriting process are to accept or decline the risk or to accept a risk on terms. These terms may include imposition of specific exclusions or restrictions on the extent of the cover or they may include loadings on the premium. To the extent that the underwriting process includes any loading on the premium there is strong overlap between the pricing and underwriting elements of an insurance company.

In any case the discrimination of different customers according to a set of criteria constitutes an approach to Customer Relationship Management. Many companies approach underwriting from a fairly traditional point of view based on experience of handling similar risks over a long period of time. Other companies may take a more commercial view of underwriting and seek to quantify, for example, the setting of underwriting criteria in terms of the relative costs of:

- the probability of rejection of correctly priced risks;
- the probability of acceptance of under priced risks;
- the expense of the underwriting process.

The underwriting process, apart from being distinguished between initial and review underwriting where review underwriting may be driven by the claims experience, can also be defined by a medley of the following processes:

- automated underwriting;
- manual underwriting and;
- referral to other organisations or departments.

Underwriting further exemplifies an approach to Customer Relationship Management based on value within insurance companies. There is arguably much scope for development in this area.

The primary challenge is to establish where there is and where there is not a rational basis for current underwriting practice and for the subjective views of underwriters and to ensure, at the very least, that good management information is collected. The collection of this data is easily justifiable in Personal Lines where volume is king. It is, however, just as important in Commercial Lines where the size of individual risks means that the impact of individual decisions is commensurately greater.

Furthermore, each underwriting process has a cost attached to it. Clearly this is greatest where manual intervention is required. Particularly in Personal Lines but arguably in small Commercial business, the cost of such intervention needs to be

judged against the benefits that it brings. Such a balance can only be achieved on the basis of good information

Thereafter, a natural next step could be the development of a closer relationship with Pricing, which may be able to deal with some of the risks that were previously underwritten manually, or to enhance the pricing of risks subject to automatic underwriting.

Ultimately, however, the goal should be for a more complete and financially-based form of CVM – which will make allowance not only for the initial underwriting, but for subsequent reunderwriting at renewal or at claim. This approach will, of course, encompass the convergence of Pricing and Underwriting.

A further benefit of CVM for Underwriting could come out of understanding of the inherent volatility of the value measures. Such volatility would vary from segment to segment. Understanding the relative volatility of the various segments would help insurers to manage their risks.

8. ILLUSTRATIONS OF CUSTOMER VALUE MEASUREMENT

8.1 Customer Segmentation of Travel Insurance

In order to illustrate the implementation of CVM, the following example has been constructed in a single product world for a company selling Annual Travel Insurance via a single channel (direct marketing via the press).

All values are calculated relative to 1st Jan 2002 and assumptions around acquisition cost and future retention are set by customer segment. In the illustration, Lifetime values are considered over a 5 year timeframe.

For simplicity, only one peril is considered – the loss of a personal article of value £250. This claim severity is assumed constant across all customer segments. The claim frequency is, however, taken to vary by customer segment, although the number of claims per year is taken to be restricted to either 0 or 1.

Pricing is assumed to be constant over time and there is assumed to be no claims, expense or exposure inflation.

It is further assumed for simplicity that the company does not apply a no 'nil claims discount' (NCD) scheme.

The following Measures of Customer Value considered are (using the numbering shown earlier):

1. Present Value of Future Profits
2. Historic Profits
4. Past Profit plus the expected future profit, with credibility weighting
5. The historic number of claims
6. Total claims payment minus the premium on an undiscounted basis: cumulative policyholder measure
6a. Total claims payment minus the premium on an undiscounted basis: incremental policyholder measure
9. Gross premium

We have chosen these measures because they rely only on the small set of assumptions detailed below.

These measures relate to the **actual** purchase of the Travel product and the expected term. Further measures could consider the **strategic** value of the product to the company. This would include the propensity to purchase other potential products (cross-sell) or to upgrade the current level of cover (up-sell) and the potential value that could be leveraged through further marketing initiatives.

Analyses carried out within the companies represented in the Working Party all concur that customers with more than one product are more likely to renew. As a result of having multiple products, assuming adequate risk pricing, multiple product

holders are likely to have higher Lifetime Values. These types of relationship are neglected in the one Product approach adopted in this section.

In order to identify customer segments there are a number of approaches that could be used:

- Financial status (spenders/borrowers/investors)
- Geographical-Financial status (country dwellers/stylish singles/blue collar owners)
- Income bands
- Daily newspaper read (Sun/Record or Times/Telegraph)
- Age Groups
- Marketing Groups (e.g. affluent, baby boomers, empty nesters, etc)

If possible from the results of the definition of the customer segments, it would be beneficial to group each within one of three higher level categories:

1. Retain: to include highest value customers
2. Growth: to include customers with the highest unrealised potential
3. Release: those customers generating negative profits on both an actual and strategic basis.

This is an example of translating Customer Value into actionable segments.

For the purpose of this example we will define our customers by their choice of newspaper, and the direct marketing of the annual travel policy will be through this media. The chosen media are:

- The Times
- Daily Telegraph
- Daily Mail
- Daily Express
- The Sun

Note that the segments are fictitious and that the corresponding data is for illustration only.

For each segment, lifetime value can be calculated in monetary terms from the following assumptions. The examples shown are for each of the newspaper readers:

The Customer Value Measures are defined below.

s = time now

f Claim Frequency
N Number of Claims (random outcome of binomial process dependent on the customer's own claim frequency, f)

μ Claim Severity
a Acquisition Cost
e Annual Administration Expense
P Gross Premium
r Retention Rate
i Discount Rate
z Credibility Weighting

1. Present Value of Future Profits

$$\sum_{t=s}^{s+4}\left[P_t - f_t * \mu_t - a_t - e_t\right](1+i)^{(-t+s)} * r^{(+t-s)}$$

2. Historic Profits

$$\sum_{t=1}^{s-1}\left[P_t - N_t * \mu_t - a_t - e_t\right]$$

4. Past Profit plus the expected future profit, with credibility weighting

$$z*(1) + (1-z)*(2)$$

5. The historic number of claims

$$\sum_{t=1}^{s-1}\left[N_t\right]$$

6. Total claims payment minus the premium on an undiscounted basis: policyholder measure

$$(\text{Claims} - \text{Premiums}) = \sum_{t=1}^{s-1}\left[N_t * \mu_t - P_t\right]$$

9. Gross premium

A three-year view is taken

$$\sum_{t=s-2}^{s}\left[P_t\right]$$

Given the assumptions, a premium is determined in order to ensure the required profitability for the cohort. The premium is assumed to be uniform across segments (£87.50).

Customer Segment	Market Distribution	Claim Severity	Claim Frequency	Acquisition Cost	Annual Expense	Retention Rate	%
The Times Reader	20%	250	15%	40	10	85%	50%
Daily Telegraph Reader	20%	250	20%	35	10	80%	50%
Daily Mail Reader	20%	250	25%	30	10	75%	50%
Daily Express Reader	20%	250	30%	25	10	70%	50%
The Sun Reader	20%	250	35%	20	10	65%	50%

The detailed outputs for each of the 5 segments are to be found in Appendix B.

The results are summarised graphically below for the Present Value of Future Profits and for the Historic Number of Claims.
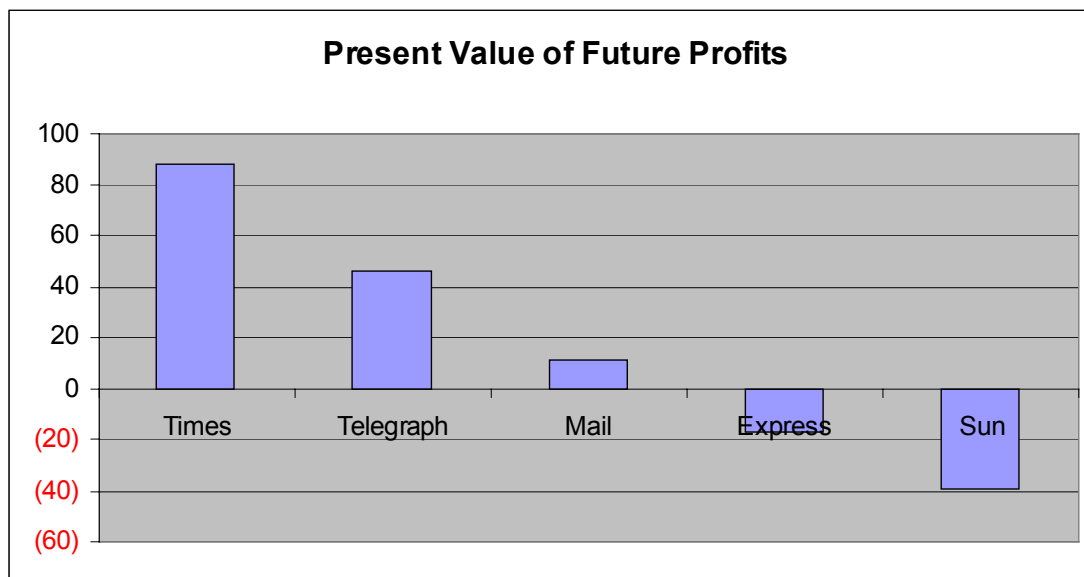
A clear trend is seen of value increasing from the reader of *The Sun* through to the reader of *The Times*. This trend is independent of claim experience due to the assumption of flat claims frequency and severity.

Historic Number of Claims
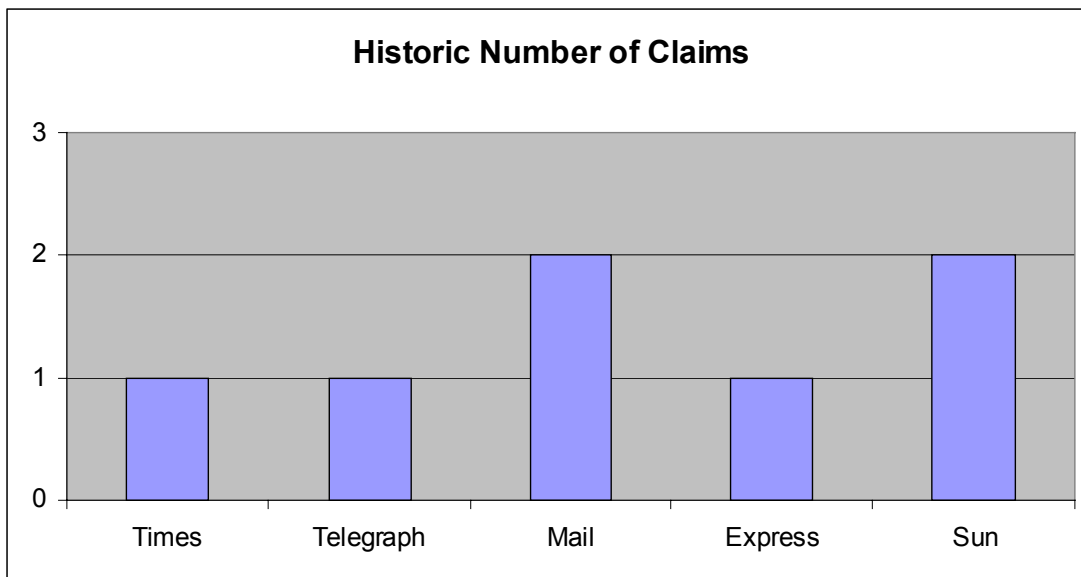
The picture given by the Historic Number of Claims value measure is very different to that shown by the Present Value of Future Profits. There is little clear differentiation between the different segments. The level of fluctuation is moreover much greater than in the previous case: the variability would of course be much greater if a period of less than 5 years were considered.

Cumulative Historic Profits by Year
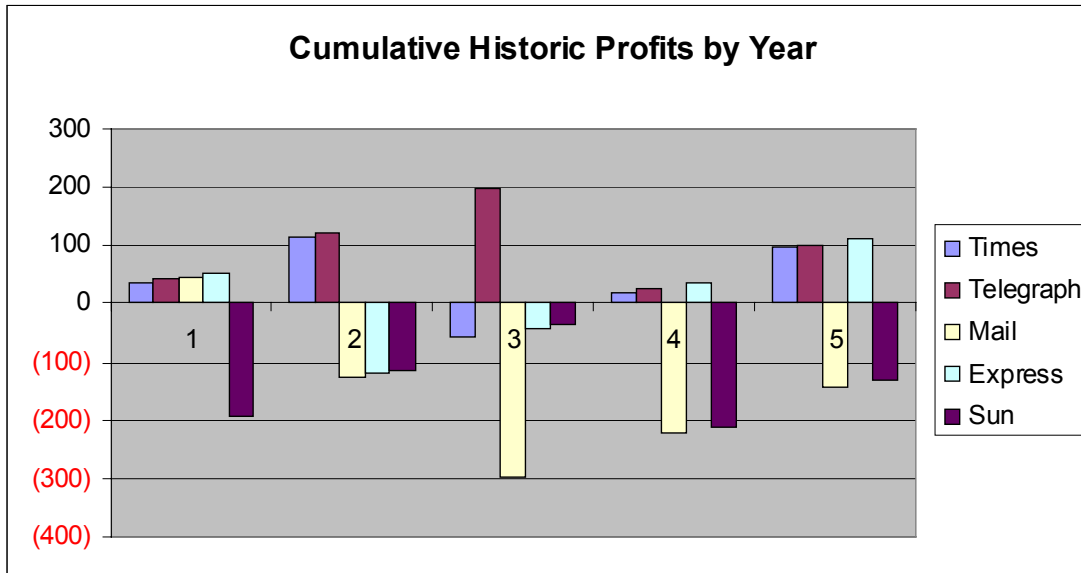
The picture shown by the Cumulative Historic Profits value measure is again very different. There is a high level of variation from year to year and across the segments. The level of fluctuation would have been further increased had the model included severity fluctuations. Interestingly, the reader of *The Sun* always shows negative Customer Value.

Summary of Individual Customer Values

Whilst the Customer Values are clearly ordered for the Present Value of Future Profits, with values decreasing down from *The Times* reader to the reader of *The Sun,* no such clear order exist for the Historic Number of Claims.

From the point of view of the customer, the readers of *The Sun* and of *The Mail* have had the greatest value from the Travel product. Whilst the value enjoyed by the *The Sun* reader is antagonistic to the corresponding value to the company, this is not the case for the reader of *The Mail,* where the company ranks the customer relationship in the middle of the pack. Such a case demonstrates that both parties (customer and company) can simultaneously extract value – the measures are different and do not necessarily conflict. This difference of point of view is accentuated where the customer view is historic, but the company view is prospective. Clearly, appropriate risk pricing is key in any case.

The different measures will produce spot values that may lead the provider into different decision making routes aligned with the Customer Value Measure. It is sensible to consider a variety of measures.

The following tables sets out the variation in value as measured in Year 3 by each of the value metrics.

Customer Value Measure	Customer Segment				
	Times	Telegraph	Mail	Express	Sun
1. Present value of future profits	58.6	33.9	15.4	2.1	(7.0)
2. Historic profits	(57.5)	197.5	(297.5)	(42.5)	(37.5)
4. Past profit plus expected future profit with credibility weighting	86.8	77.0	(54.8)	(58.9)	(61.0)
5. Historic number of claims	1.0	0.0	2.0	1.0	1.0
6. Total claims less premiums	(12.5)	(262.5)	237.5	(12.5)	(12.5)
9. Gross premium	262.5	262.5	262.5	262.5	262.5

The view given by the Present Value of Future Profits is the same as before with value decreasing from *The Times* through to *The Sun*, with all segments other than *The Sun* being profitable. The view presented by the Historic Profits is volatile, with only *The Telegraph* being shown as profitable. However, the Credibility Weighted Historic plus Future Profits measure gives a more stable measure, broadly maintaining the same order as the Present Value of Future Profits, but adding in some of the volatility of the Historic measure. Here only *The Times* and *The Telegraph* are indicated as profitable.

Interestingly, the segments are very much divided into two camps with similar positive values for the profitable segments and similar negative values for the unprofitable segments. From the perspective of the customer there is again a lot of

volatility with *The Mail* segment seeing a lot of delivered value and *The Telegraph* seeing a lot of destroyed value.

The overlap between the stories told by the different measure is complex. However, the table does summarise clearly different perspectives on value. Any such summary, if only for a single point in time, will be subject to volatility. Whilst such volatility is an innate part of the measures, it is best to have a clear perception of what is volatility and what is (mean) value.

The variation in value as represented by The Cumulative Historic Profits by year indicates the innate volatility of any historical rather than prospective measure of value. This same volatility though is of interest in itself in terms of the indication of a propensity to future volatility. In our example, a simple Monte Carlo model based on claim frequency could be used to produce confidence intervals. Potential treatments of this volatility are discussed in Section 8.

Previous claims history may be relevant. In a simple example ignoring NCD may not be a realistic market proposition. The relationship between previous claims and claim frequency suggests that there is potential for the introduction of an NCD rating structure. (The attached graph is based on analysis carried out at one of companies represented in the Working Party.)
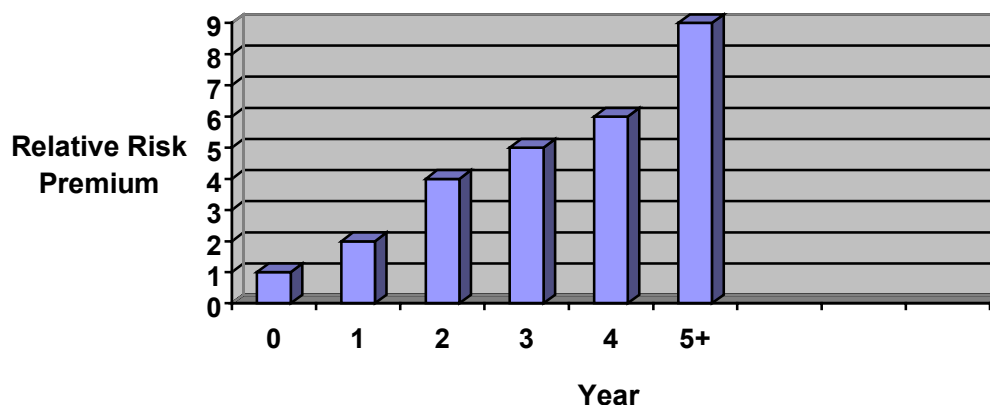
Note that all data specific conclusions in the above section are based on fictitious customer segments. These specific conclusions would be unlikely to hold given real data.

8.2 COMPUTER SIMULATION

8.2.1 Introduction

A simple simulation was run to illustrate the uses of CVM. Two customer types were considered (with around 1,000 customers in each category modelled) with various characteristics attributed to each. Six strategies were run to investigate the impact

on customer value to assist. The objective was to determine if using a measure of customer value to assist in strategic decision- making enhanced, or detracted from, aggregate customer value (as measured by profitability).

All customers were assumed to have a product holding in force at time zero. If at any subsequent point the policy lapsed, it was assumed that an attempted sale would be made in each subsequent year. A ten year time horizon was used with customer value measured in three different ways:

- profitability in year 0
- total undiscounted profitability over the ten year time horizon
- total discounted profitability over the ten year time horizon

In each year, a series of random numbers are generated to determine:

- conversion or renewal propensity
- number of claims
- claim severity

8.2.2   Customer Characteristics

The following characteristics were used. Here the parameters were invented for illustration. However, equivalent parameters could be derived from analysis of a real portfolio.

	Type 1	Type 2
Cost of attempted sale	50	50
Renewal expenses	1	1
Claim number distribution	Uniform	Uniform
Claim frequency	20%	20%
Claim cost distribution	Lognormal	Lognormal
Mean claim cost	1,000	1,000
Standard deviation	500	250
Initial premium	300	300
Price elasticity model	Linear	Linear
Price elasticity parameter – new business	0.5	0.25
Price elasticity parameter – renewal	0.25	0.125

The elasticity model is a Monte Carlo model where a product is sold or retained according to a random number ($\in$ U[0,1]), if

$$1 - elasticity\_parameter * premium / £300 > random\_number$$

In practice, a large number of additional factors might also be considered:

- standard risk and rating factors
- demographic data
- credit history

Furthermore, the model assumes that only one product exists and, accordingly, the model ignores the possibility of cross-sales, one of the key uses of customer value.

Where customers do not have product holdings, a sale is attempted in each year. This applies both to customers that have cancelled their product holdings and to potential new customer who have never held any products.

8.2.3 Strategies Tested

Six strategies, in this case centred around pricing, were tested:
0. no action (i.e. a premium of 300 charged to each customer throughout the ten year time horizon)
1. a 10% loyalty discount applied from the fifth year of a policy's lifetime
2. the offering of one years' free insurance every ten years
3. offer a 10% discount to retentive (type 2) customers
4. apply a 10% loading to retentive (type 2) customers
5. apply a 10% loading to non retentive (type 1) customers

Results

Owing to the highly simplified nature of the model, firm conclusions are not possible. It is, however, possible to see how different strategies impact value. The following charts illustrate the distribution of results when 255 simulations where run. Results for a particular strategy are measured in terms of the percentage difference in aggregate customer value from that when no strategy is pursued. The chart illustrates the highest, lowest and 25th and 75th percentile results of the 255 simulations. For the purpose of this exercise customer value was measured as the Present Value of Future Profits.

The results are shown graphically for existing customers – first for all customers combined, then for each of the two customer types. Similar graphs are then presented for a portfolio of potential customers with no product holdings.

Variation in customer value from a "no strategy" approach - all customers

Variation in customer value from a "no strategy" approach - customer type 1
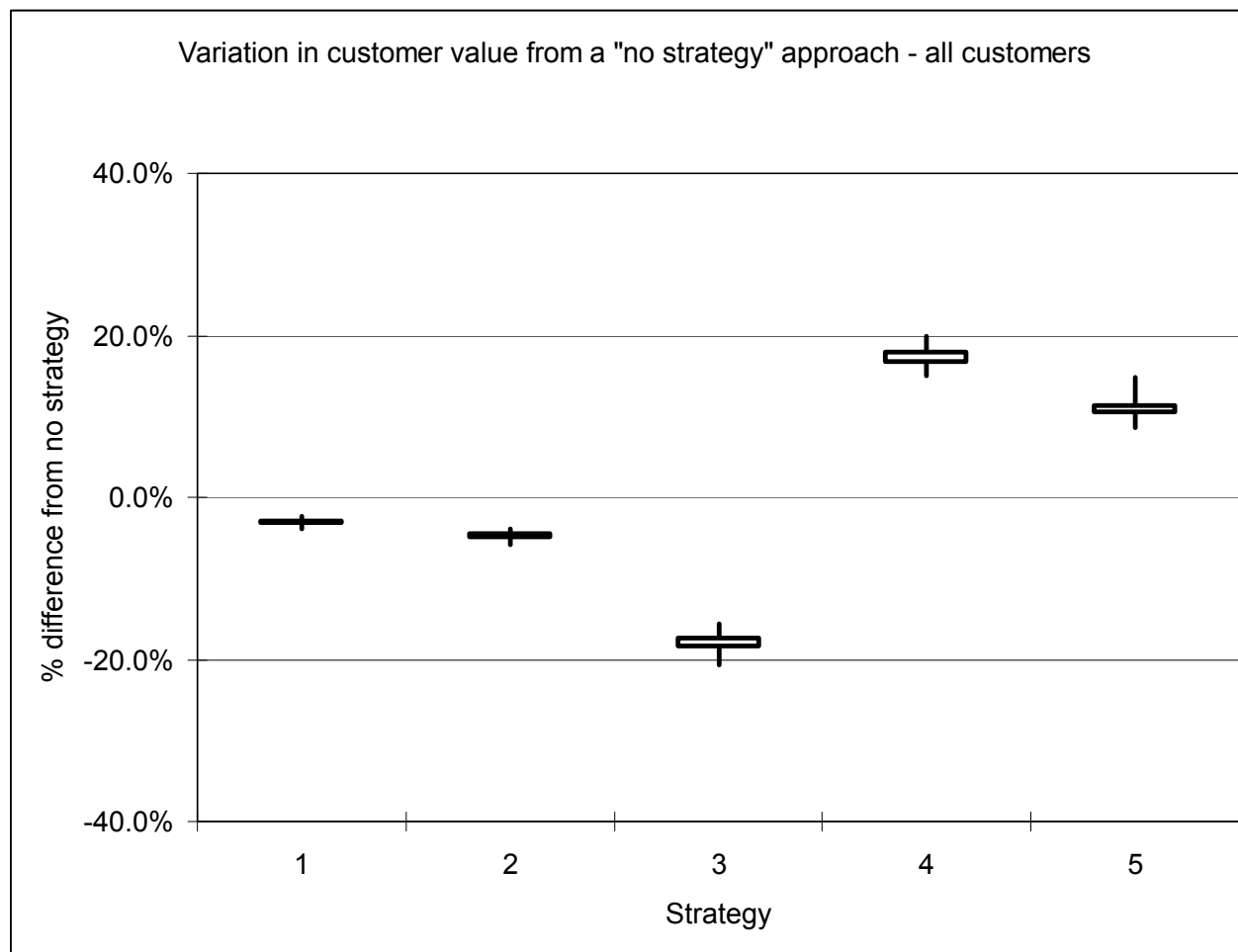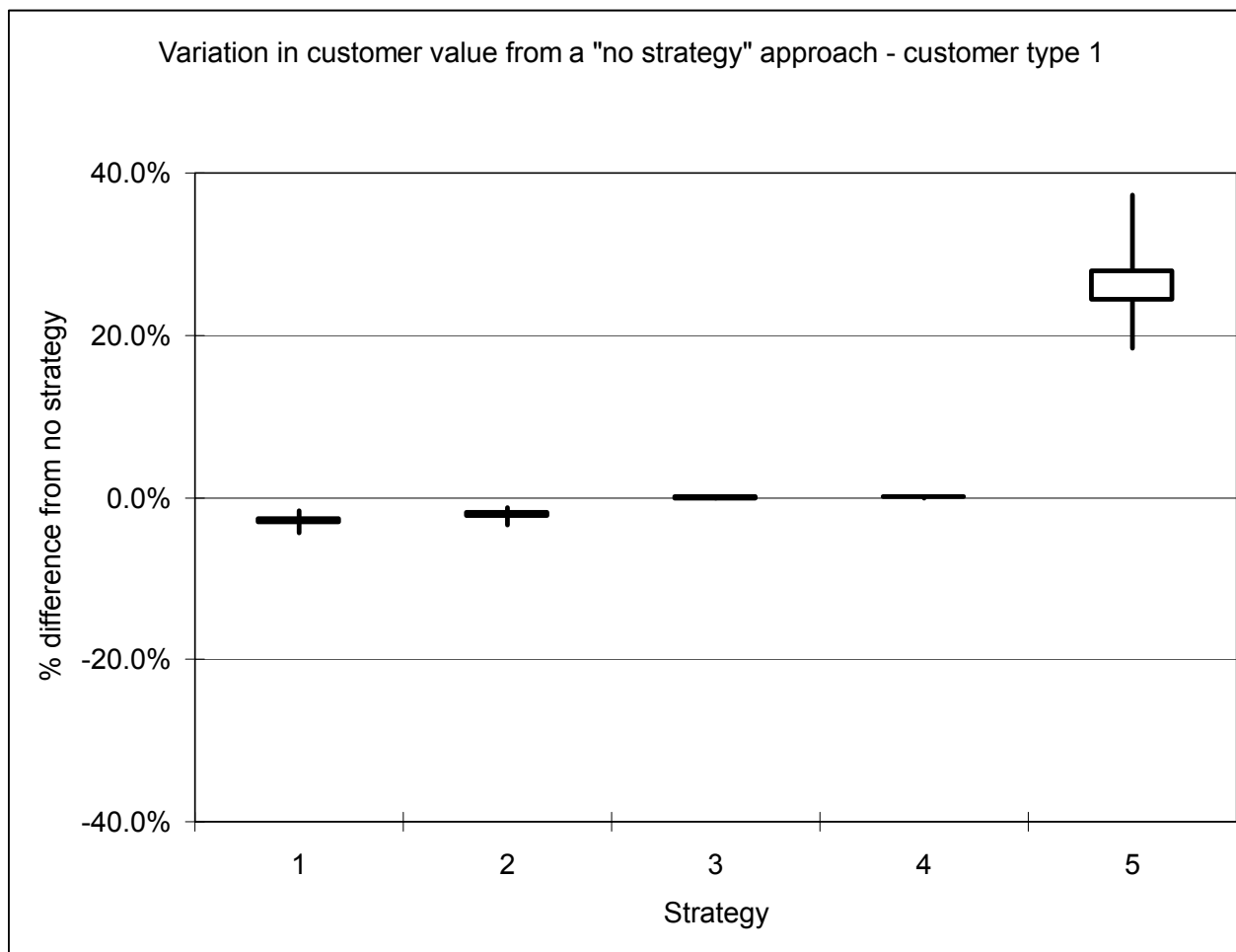
In a full implementation of this approach, potential strategies could be refocused as a result of the above output. For example, the negative values seen for Strategy 1 lead to investigation of an alternative strategy, 1', where the discount might be lower than 10%.

Variation in customer value from a "no strategy" approach - customer type 2
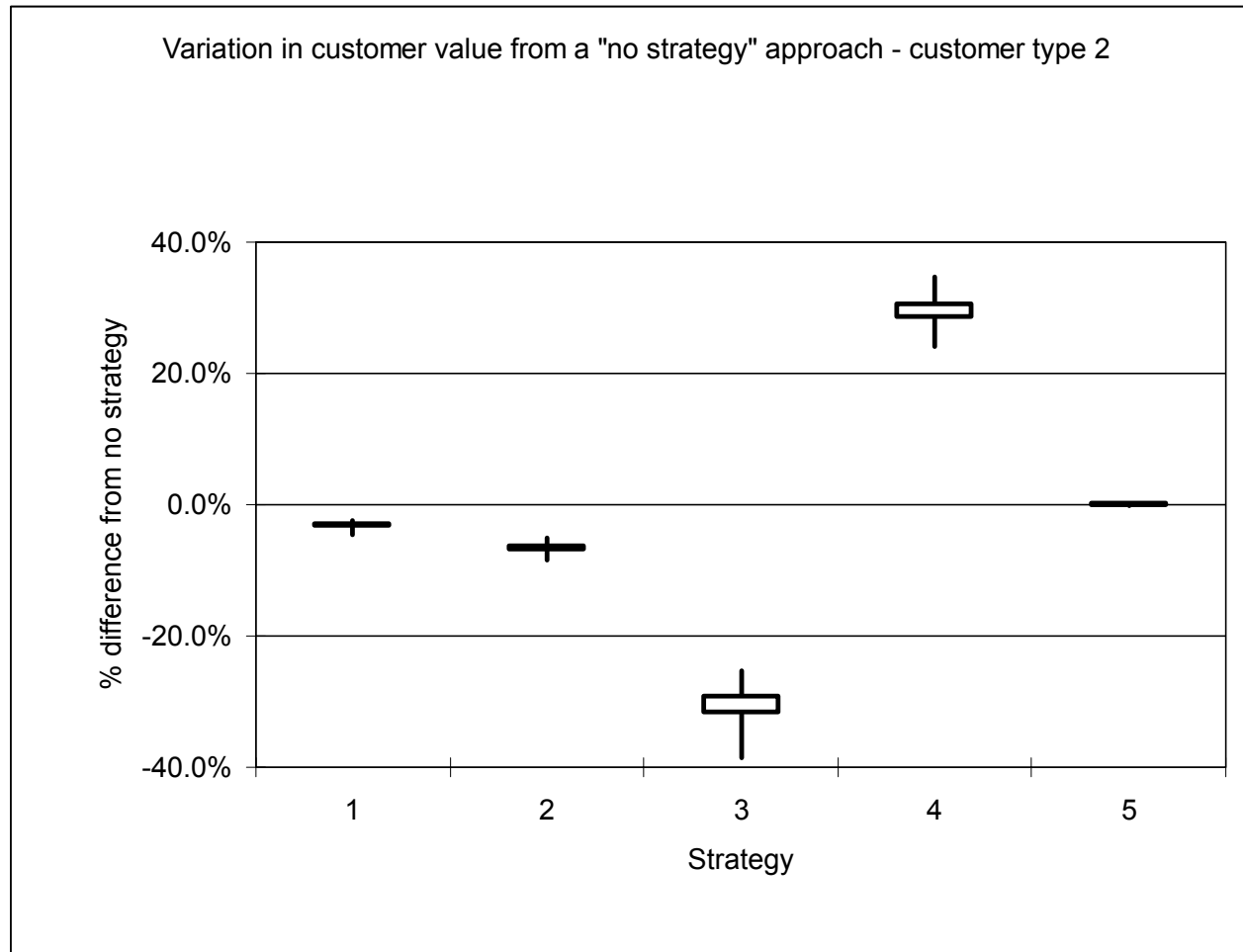
Note that for retentive customers, Strategy 2 gives lower values than Strategy 1 for type 2 customers. This is at variance with what is seen for type1 customers. Type 2 customers are more likely to remain on the books to enjoy the free year's cover. This is not the case for the unretentive customer type.

It should be noted that customer retention behaviour was assumed not to change as a result of the free year's insurance.

Variation in customer value from a "no strategy" approach - all customers
No initial product holdings

Variation in customer value from a "no strategy" approach - customer type 1
No initial product holdings
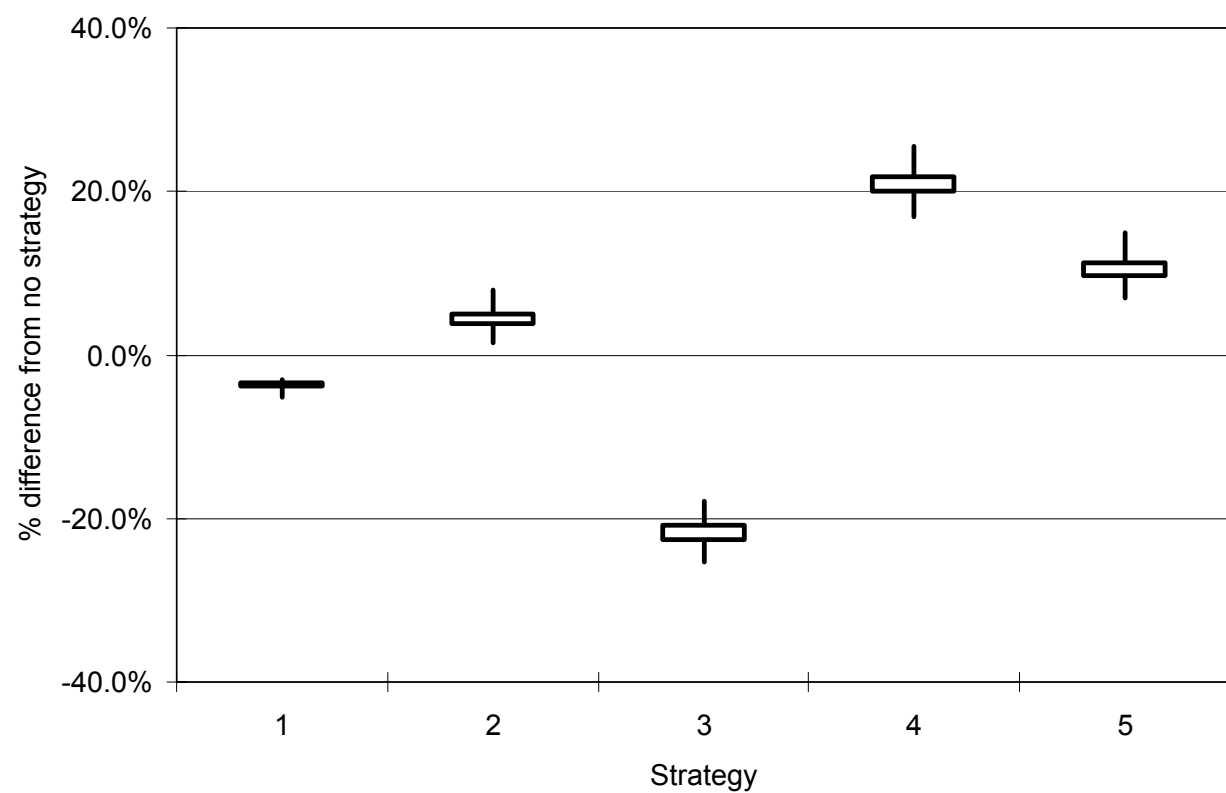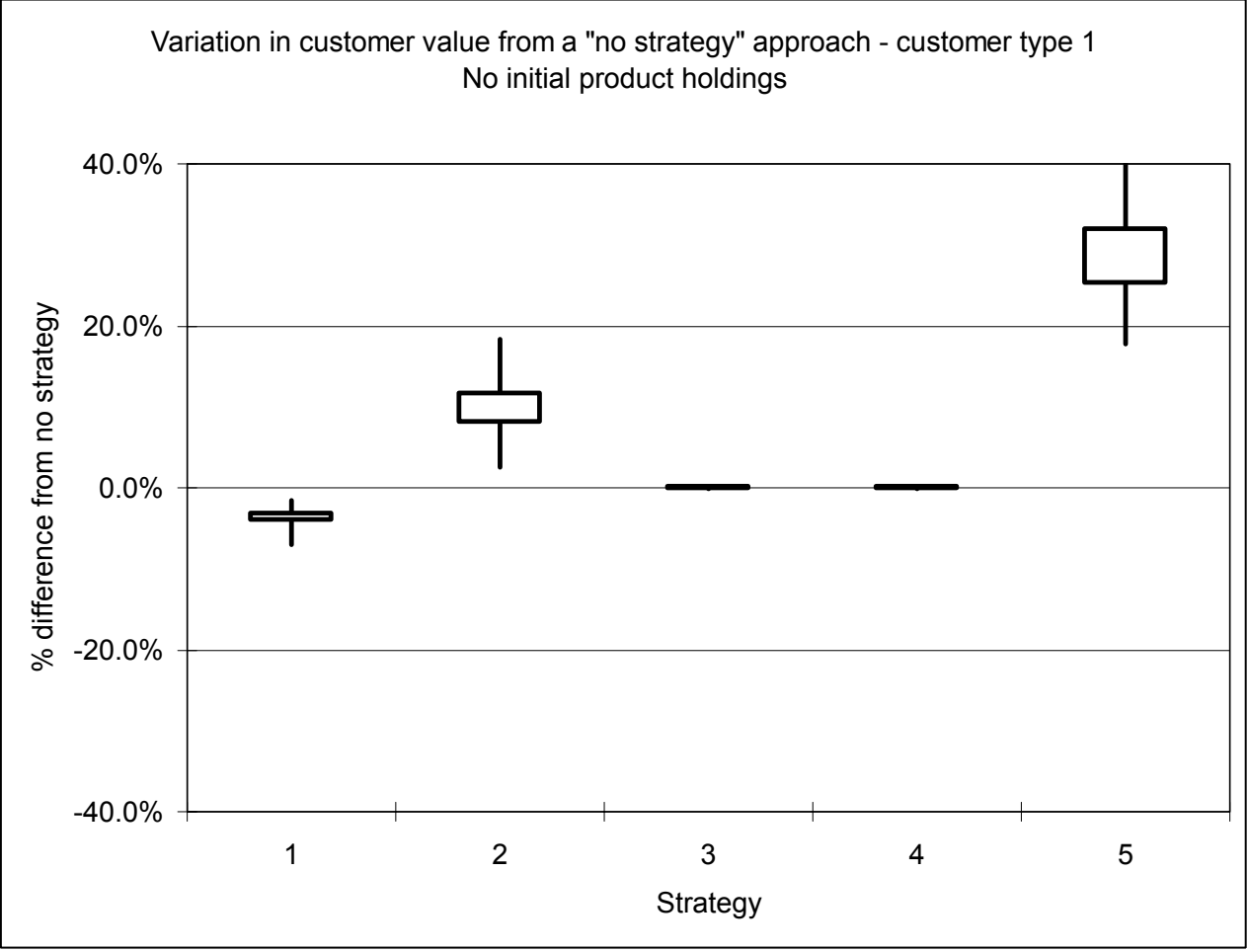
Variation in customer value from a "no strategy" approach - customer type 2
No initial product holdings
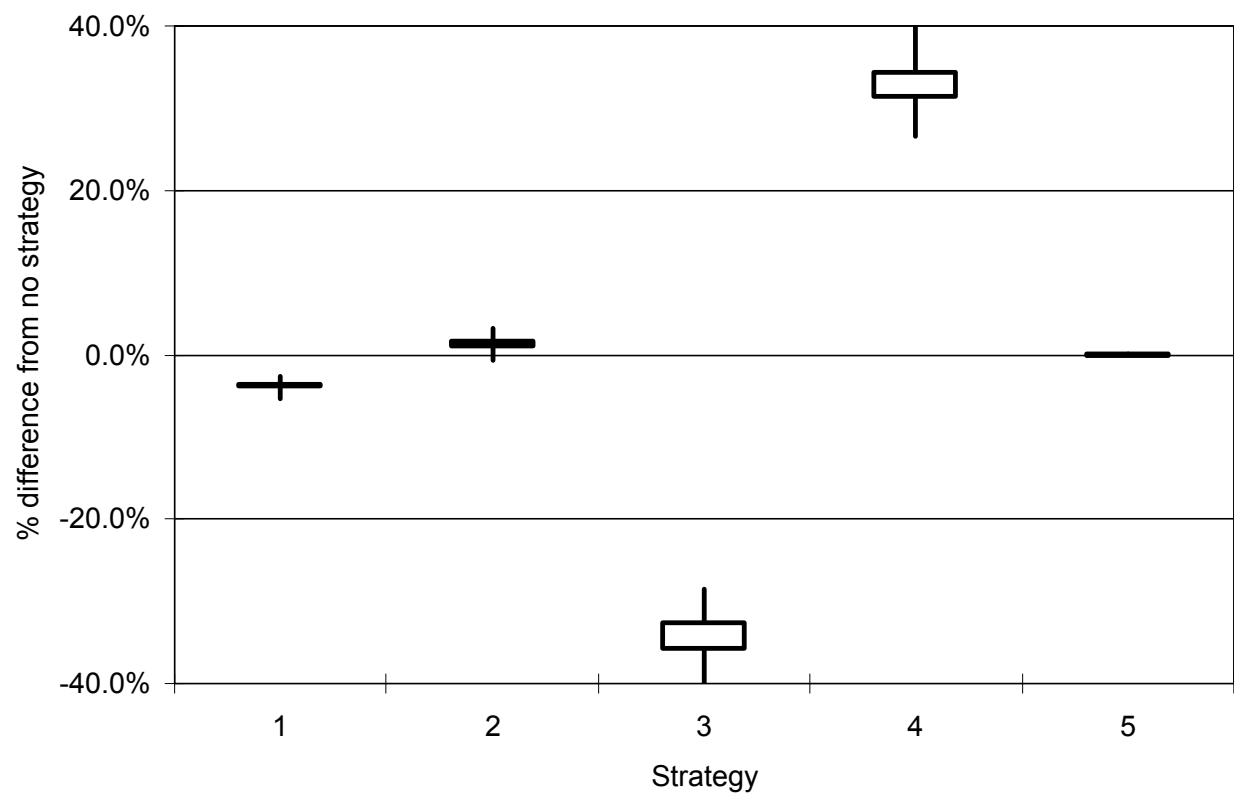
Note that the reversal of order for Strategies 1 and 2 seen for existing customers between Type 1 and 2 policyholders does not apply for new customers. This is an artefact of the model and assumptions because the time horizon for new customers is effectively shorter than the 10 year period after which a free year's cover is given. Such artefacts demonstrate the level of attention to detail which may be required to ensure that models are sufficiently robust to allow strategies to be assessed objectively.

Clearly, there is quite significant variation in the results obtained according to the strategy pursued.

A few general points are illustrated by the simulation results:

- Company value is increased by discounting premiums to unretentive customers and by increasing them for the loyal customers.

- Value can be generated by employing different strategies for different customer segments.

- The volatility of values is greater for prospects rather than for a portfolio of existing customers.

The analysis suggests that significant benefits can be obtained through using customer value to determine (and monitor) the effects of a particular strategy. In order that firm conclusions be drawn, a significant additional level of detail would be necessary, including analysis of, for example:

- cross-sales (of different products)
- more customer types
- customer types defined by a greater number of characteristics such as:
  - risk and rating factors
  - credit history
  - demographic data

9.   OTHER ISSUES

In this section, we want to focus on those issues of customer value specific to stakeholders that we have neglected so far. The section is divided in the following subsections:

1. Broker Value Measurement
2. Broker influence on CVM
3. CVM in a broker environment
4. CVM from a broker perspective
5. Broker Regulation and CVM
6. New Distribution and Service channels
7. Analysts
8. Consumer groups/personal financial press
9. FSA
10. Regulation

For most of the issues raised, there will be no one clear answer.

9.1   Broker Value Measurement

Many insurance companies distributing their products through brokers will consider in the first place their broker as the customer. This concept falls outside the scope of this paper. However, we want to point out a couple of relationships between customer and broker value.

9.1.1   Whole Greater than Sum of the Parts

Every broker has a set of customers, and every customer has a certain potential, which includes – from a company perspective – profits of future business and new business combined. However, at the broker level, the potential to identify new customers or customer segments is very real and as such increases the potential broker value.

In practice, such value is not necessarily positive. The relationship between an insurance company and intermediary can deteriorate – for reasons related to either the company or the broker – and negatively influence broker value. Brokers can (and do) move blocks of business from one insurer to another one.

9.1.2   Broker and Customer Volatility

The volatility of portfolios is dependent on many factors: portfolio size, portfolio mix, historic performance, customer segment, broker characteristics, etc.   The combination of these elements means that volatility of value is very different at the level of the broker compared with a portfolio of individual customers. This volatility of value will influence the capital allocation to customers and brokers, and therefore the profitability.

9.1.3 Influence of Expenses

Expenses can be split in several ways, fixed and variable expenses being the obvious one. However, expenses can be assigned to individual customers or brokers. Expenses assigned to customers can include the frequency and duration of customer contact, the product mix, the cross-selling and up-selling efforts, claims related expenses (allocated and unallocated), sales and renewal costs (including underwriting), etc. Expenses assigned to brokers can include training, usage of marketing materials and company resources (people, systems, other), investment in the broker practice, etc.

As such, customer value and broker value can have different meanings dependent on the type of expenses included in the calculations.

From this point of view, it can be difficult to calculate customer value for composite insurers, as the basis for assigning expenses to either the life or the general insurance companies may be somewhat arbitrary.

9.1.4 Evaluate Brokers Book of Business

Customer value can be used as a proxy for broker value. This methodology can be especially useful in the case a broker's book of business needs to be valued.

9.2 Broker influence on Customer Value Measurement

Broker characteristics will influence customer value. A classic example is brokers selling direct or face-to-face. But also other broker characteristics will influence the evaluation of individual customers. It is clear that these characteristics will just complicate the techniques as described above. Broker behaviour will itself, of course, influence customer behaviour.

9.3 Customer Value Measurement in a broker environment

In a broker environment, it can be complicated to apply customer value concepts (as opposed to broker value concepts). All applications of customer value have to be applied in a broker context. Insurance companies can only perform cross-selling and retention actions once the brokers are included in the solutions.

9.4 Customer Value Measurement from a broker perspective

Brokers can also perform CVMs. It is clear that the customer view for a broker can be very different than that for an insurance company. Cross-selling, up-selling, retention, claims experience, revenues, etc. have all a very different meaning for brokers and insurance companies. In this paper, the emphasis is clearly not on the broker side of the valuation. The concepts will be very similar, but the values will turn out to be very different.

9.5   Broker Regulation and Customer Value Measurement

New regulation on polarisation, broker compensation and intermediary qualification will influence the different elements of both customer and broker valuation. We will not discuss these issues in this paper.

9.6   New Distribution and Service Channels

New distribution and service channels will have their particularities regarding customer and broker valuation. The investments that are performed by the insurance industry can be included in the valuation process. This will have a large effect on the outcome for new channels or relatively new channels like internet, interactive TV, WAP, kiosks, banks, retailers, utilities, etc.

Such new channels lie outside the scope of this paper.

9.7   Analysts

A measure of customer value (from the perspective of shareholders) would be far more useful to analysts than simply premium volume or indeed current year profits in determining the value and the likely future performance of a non-life insurer (or indeed any organisation).

Analysts would need to be convinced that the framework used for calculating value was robust. The difficulties experienced in the life market in introducing embedded values and achieved profits should be a warning that this is not straightforward.

9.8   Consumer groups/personal financial press

An objective and robust measure of customer value (from the perspective of policyholders) would be of great use to these groups, who spend much time advising consumers and trying to help them make appropriate decisions.

9.9   FSA

CVM could satisfy some of the requirements of the FSA in terms of disclosure. However, careful consideration would need to be given as to the relevance and transparency of the information that might be given to customers at the point of sale.

Highlighting the value provided to consumers could give the industry a vehicle to resurrect its rather tarnished reputation. The FSA should be pleased about that too.

9.10   Regulation

Under normal circumstances, CVM and the allocation of lifetime value to customers will not affect General Insurance accounting profits even with the move to Fair Value Accounting. This is because there is no current intention to recognise the embedded value of existing customers, except where the customer has the right to renew at fixed price. Only in these circumstances would the accounting profits move to the economic value of the customer.

The CVM approach could however be used to evaluate Goodwill, particularly in the context of Acquisitions and Corporate Strategy.

APPENDIX A BREAKDOWN OF CUSTOMER VALUE MEASURES

Customer Value Measure	FINANCIALS							PRODUCT	CUSTOMER		COMPANY		DISTRIBUTION
	Past Claim Exp	Prospective Claim Exp	Cust Retention	Past Cust Related Expenses	Future Cust Related Expenses	Cross Up-Selling Potential	Product Mix	Product Definition	Customer Satisfaction	Cust Peace Of Mind	Company Solvability	Company Expense Structure	Dist Channel
1. The present value of future business		✓	✓		✓	✓	✓						
2. The past value of business	✓			✓			✓						
3. The required target profit minus the emerged profit	✓			✓			✓						
4. The past profit plus the expected future profit, possibly with a credibility weighting	✓	✓	✓	✓	✓	✓	✓						
5. The number of claims	✓												
6. The total claims payment minus the premium on a undiscounted basis	✓						✓						
7. The total claims premium minus the premium on a discounted basis	✓						✓						
8. The contribution to fixed expenses							✓						

Customer Value Measure	FINANCIALS							PRODUCT	CUSTOMER		COMPANY		DISTRIBUTION
	Past Claim Exp	Prospective Claim Exp	Cust Retention	Past Cust Related Expenses	Future Cust Related Expenses	Cross Up-Selling Potential	Product Mix	Product Definition	Customer Satisfaction	Cust Peace Of Mind	Company Solvability	Company Expense Structure	Dist Channel
9. Gross premium							✓						
10. The service									✓				✓
11. The absolute retention rate									✓				
12. The retention rate relative to the market									✓				
13. The financial strength of the organisation											✓		
14. The expense ratio												✓	
15. The profit margin plus expense ratio											✓	✓	
16. The profit plus expenses divided by the risk premium											✓	✓	
17. The extent of the cover								✓					
18. The marketing spend per policyholder												✓	✓

Customer Value Measure	FINANCIALS							PRODUCT	CUSTOMER		COMPANY		DISTRIBUTION
	Past Claim Exp	Prospective Claim Exp	Cust Retention	Past Cust Related Expenses	Future Cust Related Expenses	Cross Up-Selling Potential	Product Mix	Product Definition	Customer Satisfaction	Cust Peace Of Mind	Company Solvability	Company Expense Structure	Dist Channel
19. The inclusiveness of the policy versus the strength of the underwriting restrictions								✓					
20. The number of products held							✓						
21. The reduction in volatility of outgoings										✓			
22. The truest risk		✓	✓		✓	✓	✓	✓					
23. The greatest risk cross subsidy		✓	✓		✓	✓	✓						
24. The availability of cover								✓			✓		
25. Peace of mind										✓			
26. Affordability and fairness			✓					✓		✓			
27. Competitiveness			✓					✓	✓	✓	✓	✓	✓
28. Brand value			✓			✓	✓	✓	✓	✓	✓	✓	✓

Customer Value Measure	FINANCIALS							PRODUCT	CUSTOMER	COMPANY			DISTRIBUTION
	Past Claim Exp	Prospective Claim Exp	Cust Retention	Past Cust Related Expenses	Future Cust Related Expenses	Cross Up-Selling Potential	Product Mix	Product Definition	Customer Satisfaction	Cust Peace Of Mind	Company Solvability	Company Expense Structure	Dist Channel
A. Today Underwriting	✓						✓	✓			✓		
B. Today Marketing			✓			✓	✓	✓	✓	✓			✓
C. Today Pricing		✓			✓		✓	✓			✓	✓	

Value Measurement

	Past Claim Exp	Prospective Claim Exp	Cust Retention	Past Cust Related Expenses	Future Cust Related Expenses	Cross Up-Selling Potential	Product Mix	Product Definition	Customer Satisfaction	Cust Peace Of Mind	Company Solvability	Company Expense Structure	Dist Channel
Decision taking by company		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Insight	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

APPENDIX B DETAILED OUTPUTS OF CUSTOMER SEGMENTATION OF TRAVEL INSURANCE

The Times Reader	Inputs	Year 1	Year 2	Year 3	Year 4	Year 5	Lifetime Value	Value Measure
Claim Frequency	f	15%	15%	15%	15%	15%		
Number of Claims	N	0	0	1	0	0	1	**5.**
Claim Severity	μ	250	250	250	250	250		
Claim Cost		0	0	(250)	0	0	(250)	
Acquisition Cost	A	(40)					(40)	
Annual Administration Expense	E	(10)	(10)	(10)	(10)	(10)	(50)	
Premium	P	87.5	87.5	87.5	87.5	87.5	437.5	
3 Year Gross Premium		87.5	175.0	262.5	262.5	262.5	262.5	**9.**
Loss Ratio		0%	0%	286%	0%	0%	57%	
Expense Ratio		57%	11%	11%	11%	11%	21%	
Combined Operating Ratio		57%	11%	297%	11%	11%	78%	
(Yearly) Return on Premium		38	78	(173)	78	78	98	
Retrospective (Cum) Return on Premium		38	115	(58)	20	98		
Total Claims Payment minus Premium (Undiscounted) Incremental		(88)	(88)	163	(88)	(88)		
Retrospective Total Claims Payment minus Premium (Undiscounted) Cumulative			(88)	(175)	(13)	(100)	(188)	**6.**
Retrospective Value of Business Cumulative			38	115	(58)	20	98	**2.**
Present Value of Future Business (Discounted) Incremental		0	29	24	19	16		
Prospective Present Value of Future Business (Discounted) Cumulative		88	88	59	35	16		**1.**
Retrospective Value of Business Cumulative plus Prospective Present Value of Future Business (Discounted) Cumulative with Credibility Weighting		44	63	87	(11)	18		**4.**

Daily Telegraph Reader	Inputs	Year 1	Year 2	Year 3	Year 4	Year 5	Lifetime Value	Value Measure
Claim Frequency	f	20%	20%	20%	20%	20%		
Number of Claims	N	0	0	0	1	0	1	5.
Claim Severity	μ	250	250	250	250	250		
Claim Cost		0	0	0	(250)	0	(250)	
Acquisition Cost	a	(35)					(35)	
Annual Administration Expense	e	(10)	(10)	(10)	(10)	(10)	(50)	
Premium	P	87.5	87.5	87.5	87.5	87.5	437.5	
3 Year Gross Premium		87.5	175.0	262.5	262.5	262.5	262.5	9.
Loss Ratio		0%	0%	0%	286%	0%	57%	
Expense Ratio		51%	11%	11%	11%	11%	19%	
Combined Operating Ratio		51%	11%	11%	297%	11%	77%	
(Yearly) Return on Premium		43	78	78	(173)	78	103	
Retrospective (Cum) Return on Premium		43	120	198	25	103		
Total Claims Payment minus Premium (Undiscounted) Incremental		(88)	(88)	(88)	163	(88)		
Retrospective Total Claims Payment minus Premium (Undiscounted) Cumulative			(88)	(175)	(263)	(100)	(188)	6.
Retrospective Value of Business Cumulative			43	120	198	25	103	2.
Present Value of Future Business (Discounted) Incremental		(7)	19	14	11	8		
Prospective Present Value of Future Business (Discounted) Cumulative		46	53	34	19	8		1.
Prospective Present Value of Future Business with Credibility Weightin		23	48	77	108	17		4.

Daily Mail Reader	Inputs	Year 1	Year 2	Year 3	Year 4	Year 5	Lifetime Value	Value Measure
Claim Frequency	f	25%	25%	25%	25%	25%		
Number of Claims	N	0	1	1	0	0	2	5.
Claim Severity	μ	250	250	250	250	250		
Claim Cost		0	(250)	(250)	0	0	(500)	
Acquisition Cost	a	(30)					(30)	
Annual Administration Expense	e	(10)	(10)	(10)	(10)	(10)	(50)	
Premium	P	87.5	87.5	87.5	87.5	87.5	437.5	
3 Year Gross Premium		87.5	175.0	262.5	262.5	262.5	262.5	9.
Loss Ratio		0%	286%	286%	0%	0%	114%	
Expense Ratio		46%	11%	11%	11%	11%	18%	
Combined Operating Ratio		46%	297%	297%	11%	11%	133%	
(Yearly) Return on Premium		48	(173)	(173)	78	78	(143)	
Retrospective (Cum) Return on Premium		48	(125)	(298)	(220)	(143)		
Total Claims Payment minus Premium (Undiscounted) Incremental		(88)	163	163	(88)	(88)		
Retrospective Total Claims Payment minus Premium (Undiscounted) Cumulative			(88)	75	238	150	63	6.
Retrospective Value of Business Cumulative			48	(125)	(298)	(220)	(143)	2.
Present Value of Future Business (Discounted) Incremental		(14)	10	7	5	4		
Prospective Present Value of Future Business (Discounted) Cumulative		12	25	15	8	4		1.
Retrospective Value of Business Cumulative plus Prospective Present Value of Future Business (Discounted) Cumulative with Credibility Weighting		6	36	(55)	(145)	(108)		4.

Daily Express Reader	Inputs	Year 1	Year 2	Year 3	Year 4	Year 5	Lifetime Value	Value Measure
Claim Frequency	f	30%	30%	30%	30%	30%		
Number of Claims	N	0	1	0	0	0	1	**5.**
Claim Severity	μ	250	250	250	250	250		
Claim Cost		0	(250)	0	0	0	(250)	
Acquisition Cost	a	(25)					(25)	
Annual Administration Expense	e	(10)	(10)	(10)	(10)	(10)	(50)	
Premium	P	87.5	87.5	87.5	87.5	87.5	437.5	
3 Year Gross Premium		87.5	175.0	262.5	262.5	262.5	26.25	**9.**
Loss Ratio		0%	286%	0%	0%	0%	57%	
Expense Ratio		40%	11%	11%	11%	11%	17%	
Combined Operating Ratio		40%	297%	11%	11%	11%	74%	
(Yearly) Return on Premium		53	(173)	78	78	78	113	
Retrospective (Cum) Return on Premium		53	(120)	(43)	35	113		
Total Claims Payment minus Premium (Undiscounted) Incremental		(88)	163	(88)	(88)	(88)		
Retrospective Total Claims Payment minus Premium (Undiscounted) Cumulative			(88)	75	(13)	(100)	(188)	**6.**
Retrospective Value of Business Cumulative			53	(120)	(43)	35	113	**2.**
Present Value of Future Business (Discounted) Incremental		(20)	2	1	1	0		
Prospective Present Value of Future Business (Discounted) Cumulative		(17)	4	2	1	0		**1.**
Retrospective Value of Business Cumulative plus Prospective Present Value of Future Business (Discounted) Cumulative with Credibility Weighting		(8)	28	(59)	(21)	18		**4.**

The Sun Reader	Inputs	Year 1	Year 2	Year 3	Year 4	Year 5	Lifetime Value	Value Measure
Claim Frequency	f	35%	35%	35%	35%	35%		
Number of Claims	N	1	0	0	1	0	2	5.
Claim Severity	μ	250	250	250	250	250		
Claim Cost		(250)	0	0	(250)	0	(500)	
Acquisition Cost	a	(20)					(20)	
Annual Administration Expense	e	(10)	(10)	(10)	(10)	(10)	(50)	
Premium	P	87.5	87.5	87.5	87.5	87.5	437.5	
3 Year Gross Premium		87.5	175.0	262.5	262.5	262.5	262.5	9.
Loss Ratio		286%	0%	0%	286%	0%	114%	
Expense Ratio		34%	11%	11%	11%	11%	16%	
Combined Operating Ratio		320%	11%	11%	297%	11%	130%	
(Yearly) Return on Premium		(193)	78	78	(173)	78	(133)	
Retrospective (Cum) Return on Premium		(193)	(115)	(38)	(210)	(133)		
Total Claims Payment minus Premium (Undiscounted) Incremental		163	(88)	(88)	163	(88)		
Retrospective Total Claims Payment minus Premium (Undiscounted) Cumulative			163	75	(13)	150	63	6.
Retrospective Value of Business Cumulative			(193)	(115)	(38)	(210)	(133)	2.
Present Value of Future Business (Discounted) Incremental		(27)	(6)	(3)	(2)	(1)		
Retrospective Present Value of Future Business (Discounted) Cumulative		(40)	(13)	(7)	(3)	(1)		1.
Retrospective Value of Business Cumulative plus Prospective Present Value of Future Business (Discounted) Cumulative with Credibility Weighting		(20)	(103)	(61)	(20)	(106)		4.

APPENDIX C MARKET ANALYSIS/DATA/LITERATURE RESEARCH

This Appendix presents a brief review of the literature. It seeks to set out the variety of approaches used in other industries and territories.

The review does not seek to be exhaustive but should form a useful point of reference to the interested reader.

Applications

Australia

1. National Australia Bank (NAB) – with NCR. 5 tiers of retail customers defined (A to E). A-tier grown from 20% to 27% in 6 years. (source: www.1to1.com - Advancing CRM around the world)

Brazil

2. Telesp Celular – deliver personalized products and services as a long-term strategic advantage, sponsored by the President (Carlos Vasconcelos). Over 50 CRM pilots and projects leading to Profitable Growth. . (source: www.1to1.com - Advancing CRM around the world)

UK

3. Tesco – deeper insight into customer needs and preferences and as an interaction vehicle for relationship building. (source: www.1to1.com - Advancing CRM around the world)

USA

4. Sears – 11% income increase in 2002. Focus on the connection between marketing the merchandise and the in-store experience. Customer database management leads to customer-preferred touchpoint (e-mail, catalogue, in-store, phone). (source: Peppers and Rogers Group, Customer Insight to Build Competitive Advantage)

5. Amica – Reports retention rate of 95%, and is proud of its word-of-mouth recommendations process (source: Amica webpage)

6. USAA – Strong loyalty, having the customer's children buy at the company as well. Link between high value customers and high value employees. (source: www.webcom.com/quantera/Empires1097.html)

7. Progressive – Famous for its customer friendly approach towards claims. Competitive quotes on their website. (source: www.roughnotes.com/rnmag/june00/06p38.htm) (Darden, Progressive Insurance: Building a Brand)

8. Staples – Customers who buy goods through all three channels (online, store, catalogue) spend three times as much as customers who shop through a single channel. Applied for stoch merchandising according to channel. (source: Industry Standard, 6 November 2000, Know thy Customer)

9. Capital One – High growth rates are a result of connectivity ("squeezing every valuable bit of customer information and applying it to high-tech product innovation, marketing, and risk management") and mindset ("use every contact to build customer satisfaction"). (source: Paths to differentiation, 2001 special report on the financial services industry, Cap Gemini Ernst & Young)

10. Citigroup

11. Wells Fargo

12. Charles Schwab

Industry Research

Insurance

13. CRM for Insurance; An NCR Business White Paper, KPMG Consulting, major US Bank Case Study, www.kpmgconsulting.com/clients/case-studies/major-us-bank.html

Utilities

14. Motor Industry – smarter cars detect problems with the car before the customer does. Product Lifecycle Management (PLM) by IBM. (www.1to1.com)

General

15. Managing your most precious asset… your customers; Mastering the Marketing; Sales and Service & Support Cycles for Small to Mid-sized Business; March 2002; Front Range Solutions.

16. Knowledge & Relationship Marketing Where, What & How?; W Tzokas & M Savers, www.crm2day.com/library/ap/ap0007.shtml, Inspiring New Loyalty, Royal Mail

Quantitative Research

17. Shareholder Value Measures in General Insurance, GIRO Working Party

18. Stochastic Upper Bounds for Present Value Functions, 14 December 2000, Goovaerts, Dhaene, De Schepper

19. Personal automobile premiums: an asset share pricing approach for property/casualty insurance, 10-13 November 1996, Sholom Feldblum (source: http://www.casact.org/pubs/proceed/proceed96/96190.pdf)

20. Brands and customer values; 26 March 2002; A Leifer, P Simpson & M Wilkinson; Staple Inn Actuarial Society

21. Summary and comparison of Approaches used to measure 'Life Office Values'; 16th October 2001; Life Assurance Value Measurement Working Party; Staple Inn Actuarial Society.

Market Research

22. In the Hunt to Wring the Most Profit Possible From Customers, Data Rules (March 2001) – 47% of FS firms have a formal CRM program in place. Of the remaining firms, 56% plan to institute a formal program by 2002. 34% want to shift internal measures from product-profitability to a customer-profitability model. Metrics range from retention to customer profitability. Insight in management objectives and sources of customer data. (source: http://www.fsmarketing.com/fsm/mar01/fsmmar01-cm.shtml)