

**DEVELOPMENT OF A CPA SYSTEM IN AN AUSTRALIAN
TELECOMMUNICATIONS COMPANY**

Lisa McManus
Griffith Business School
Department of Accounting, Finance and Economics
and
Service Industry Research Centre
Griffith University Gold Coast
Southport Q 4215
Australia

Phone: 61 7 5552 8022
Fax: 61 7 5552 8068
Email: l.mcmanus@griffith.edu.au

DEVELOPMENT OF A CPA SYSTEM IN AN AUSTRALIAN TELECOMMUNICATIONS COMPANY

ABSTRACT

This paper documents the successful design and implementation of a geographically segmented customer profitability analysis (CPA) system in an Australian telecommunications company. The account of the innovation action research case study is discussed in terms of the key design and implementation issues at each stage of the system development from initial site induction to the ultimate production of the CPA system. The results of the analysis in terms of the output of the segmental CPA system and potential areas of improvement are presented. The main finding of the segmental CPA was that all geographic sectors showed a positive net contribution, although customer profitability declined across the sectors with Minor Rural customers contributing the smallest profit. In addition, all low-spend customer segments were found to have a negative net contribution that increased across the geographic sectors. A number of recommendations are made to enhance the segmental CPA system for future reporting and suggestions are made for further customer accounting analyses.

Keywords: customer profitability analysis, action research, case study,

First draft.

Please do not quote without permission of the author.

Development of a CPA System in an Australian Telecommunications Company

1. Introduction

Over the past decade there has been increasing importance placed on customer profitability analysis (CPA) in practice. This is illustrated by one of the findings of Foster and Young (1997) from their survey of American and Australian managers that found “customer profitability/satisfaction” to be the “single most important current management priority” (p. 69). This importance appears not to have been reflected in the management accounting literature. Shields’ (1997) management accounting literature review failed to find a single study concerned with customer profitability between 1990 and 1996. Also, Guilding and McManus (2002) note the existence of relatively few published accounting research papers concerned with CPA. The case study reported herein seeks to address this gulf between management accounting practice and management accounting research. A review of the CPA case study literature reveals only a few accounting based CPA published case studies. Of these published studies, none consider the application of CPA in the telecommunications industry, and none are conducted on such a large scale in a company with over 7.5 million customers. The purposes of this paper are threefold. Firstly, this paper seeks to extend the CPA literature by presenting an innovation action research case study of the implementation of a geographically segmented CPA system in an Australian telecommunications company. Secondly, a general model is developed for the implementation of a segmental CPA system, and thirdly, this paper documents how a segmental CPA was successfully implemented using this model in a large telecommunications company.

The remainder of the paper is structured as follows. In the next section a review of prior CPA case studies is provided. The following section presents a discussion of the innovation action research method adopted for this case study. The remaining sections provide a depiction of the approach embraced to implement the segmental CPA system, a description of the implementation of the system in the telecommunications company and a conclusion that includes a discussion of the segmental CPA system results, system implementation issues and limitations.

2. Prior CPA Case Studies

The use of case studies as a research method for investigating management accounting in practice has increased over the last decade. This increase in the number of case studies undertaken by researchers appears to be a response to calls for a greater understanding of management accounting in practice (Hopwood, 1978, 1979, 1983; Kaplan, 1983, 1984). This view is also supported by Atkinson et al. (1997) who suggest that in Australia, case study research is ‘gaining in prominence as researchers attempt to link academic research with important issues in practice’ (p. 82). This linking of theory and practice is particularly relevant to CPA, as it is a fairly new area of management accounting academic interest.

For a relatively new area of academic research very few published case studies have been found that focus on CPA. A summary of the case studies considered pertinent is provided in Table 1. Of the ten studies listed, only four have a strong management accounting orientation. The remaining case studies are focused towards other disciplines such as marketing, hotel management and management information systems.

Insert Table 1 Here

The first three case studies outlined in Table 1 are management accounting teaching cases published in Cooper and Kaplan's (1991a, 1991b, 1991c) "*The Design of Cost Management Systems*" textbook. The Kanthal case typifies most of CPA studies as it demonstrates how activity based costing (ABC) can be applied with customers as the unit of analysis. Kanthal had traditionally allocated customer-related selling costs to their products on the basis of sales revenue. With a new focus on deploying company resources more profitably, it was considered more appropriate to determine the sales, marketing and administration resources consumed each time a customer placed an order. Cost drivers (for example number of orders) were assigned to the identified cost pools (for example ordering costs) and the new system revealed that sales levels were not the main driver affecting consumption of the company's selling resources. Following the development of the new CPA system, the company discovered that many of its customers that it had thought of as profitable were, in fact, loss making. It found that only 40 percent of the company's customers were profitable, that its most profitable 5 percent generated 150 percent of the company's profits, and that the least profitable 10 percent of its customers lost 120 percent of the profits.

Quain (1992) outlines a hypothetical segmental CPA example in a hotel. The author focuses on illustrating the importance of including all revenues earned by a hotel's customer segments, from all hotel activities, in measuring segment profitability. Examples of these sources of revenue include food and beverage sales, room service, mini-bars, tours etc., in addition to the traditional room sales. This type of analysis differs to Cooper and Kaplan's CPA case studies, in that *average* sales and cost of sales per revenue source is included. While averages may prove useful for an initial analysis, a more reliable method requires the tracing of actual revenues and costs to each customer or customer segment whenever possible.

Struchfield and Weber (1992) detail the development and impact of a CPA system instigated at a British securities firm, Barclays de Zoete Wedd Securities. The CPA system developed incorporates ABC techniques to calculate the profitability of each of the company's 6,000 daily trades. Struchfield and Weber identify two types of revenue sources, commission revenue and trading revenue, which are traced to each particular trade based on the commission paid and the trading profit earned. Five principal cost categories are outlined and costs are allocated to each trade on the basis of the main activity that consumes those resources. For example, the sales support costs are allocated to trades on the basis of staff costs per hour, multiplied by the sales support hours given to each client, divided by the number of trades per client. The CPA system involves quarterly generation of a large number of reports detailing the profitability of many cross-sectional groupings. The company uses the reports to segment their clients into four customer categories based on current profitability and potential for growth.

The fourth management accounting case study outlined in Table 1, is the Blue Ridge Manufacturing case described by Juras and Dierks (1993). The details of this case were published in *Management Accounting* as the basis of a 1994 student case competition. Foster, Gupta and Sjoblom (1996) illustrate CPA by undertaking an analysis of the Blue Ridge Manufacturing data. Blue Ridge Manufacturing produces and sells various types and sizes of sports towels. The company has identified three customer segments based on size, that is, large, medium and small customers. The CPA described by Foster, Gupta and Sjoblom (1996) is based on these market segments. In the analysis, all direct costs such as discounts and commissions are traced to individual customers, and other indirect marketing, distribution and customer service area costs are allocated to customers on the basis of the key activities that

drive these costs. For example, purchase order costs are allocated to customers by the number of purchase orders, and shipping costs are allocated to customers by the number of shipments. The overall findings of the analysis are that the large customer segment (with 38.1 percent of total company revenues) contributes the majority of the company's operating income (67.3 percent of the total operating income). In comparison, the small customer segment (providing 39.2 percent of company revenues) has a marginal negative contribution towards operating income. In addition, a further analysis of the large customer segment was undertaken by appraising the profitability of individual large customers.

Storbacka (1997) discusses customer profitability analysis in relation to different methods of segmenting a customer base and analysed data from two retail Nordic banks to provide an example for each of four segmentation methods. These were based on customers' revenues and costs, trading volume, profitability and a combination of volume and profitability. While no one method was recommended over another, Storbacka suggests that the most appropriate method of segmentation is dependent upon the initial aim of the analysis. The findings of the profitability-based segmentation are similar to the other case studies discussed. A small percentage of the customer base was found to contribute the majority of the bank's profits. Specifically, it was found that 4.87 percent of the bank's customers generated 93.31 percent of profits.

Mulhern (1999) elaborates on measurement issues in connection with a CPA performed for a pharmaceutical manufacturer. In this case, the profitability of the company's 834 customers (i.e., doctors) for three sales territories was analysed over an eighteen-month period. A contribution margin approach was adopted with only variable costs (i.e., sales calls, product samples and direct mail costs) allocated to customers. In addition, the effects of inflation were also incorporated into the analysis, by adjusting the dollar values using the average price increase for all drugs sold by the pharmaceutical manufacturer. The results of the CPA found that the profit per customer varied from more than \$62,000 to a loss of more than \$12,000. Furthermore, the results support the findings of the case studies noted in Table 1, in that a small proportion of customers were found to be contributing a large portion of the profits (i.e., 20 percent of the customers contribute 65.5 percent of the profits).

The Noone and Griffin (1999) study concerns a thirteen-month study of the development and implementation of a segmental CPA for an Irish hotel. The analysis was based on allocating revenues and costs to twelve customer segments. Average figures were used to allocate revenues to each of the segments, as the front office system did not capture revenue by customer segment information. Therefore, a random sample of guest bills was analysed to estimate an average spend per person/per night for each customer segment. This revenue allocation is a far less sophisticated method than tracing actual revenues to customer segments and opens a potential for distorted and inaccurate CPA information. In addition, due to the seasonality of the hotel industry, averages may be misleading when applied to shorter time periods such as months or quarters.

Noone and Griffin identified nine cost pools. These nine cost pools were allocated to the customer segments on the basis of the main activities driving the costs. For example, housekeeping costs were allocated to customer segments on the basis of the number of bed nights. The key finding of the study was that the three highest profit contributing segments generated 38 percent of the hotel's total revenues and contributed 137 percent of the total profits. It is interesting to note that the results of the segmental CPA were in contrast to management's expectations. For example, management anticipated the "Bar" customer

segment would generate about 20 percent of the hotel's profits. The CPA analysis indicated, however, that this segment was in fact a loss-making segment, providing losses valued at around 30 percent of total profit.

Van Raaij, Vernooij and van Triest (2003) detail an approach for the implementation of CPA in industrial firms by discussing the implementation of CPA in a firm that produces and sells professional cleaning products. The authors outline a six-step approach to overall CPA implementation from identifying active customers to the eventual establishment of the necessary CPA infrastructure. In implementing the CPA in the case organisation, ABC was adopted as the method to calculate end-user customer profitability. Overall, the findings of the CPA were consistent with the other case studies highlighted in Table 1, with the largest 20 percent of customers contributing 93 percent of revenues and 95 percent of profits.

This review of the CPA case study literature has highlighted ten published CPA case studies in an attempt to give context to this geographically segmented CPA case study. Of the ten case studies discussed only four of the studies are specifically written from a management accounting perspective. This supports the suggestion that there has been little prior management accounting interest in this area. The following section will outline the action research based methods adopted for the case study.

3. The Innovation Action Research Method

The case study was conducted using "action research". The mode applied in this case study can be specifically considered within Kaplan's (1998) notion of "innovation action research".

The geographically segmented CPA case study represents action research, as the study's findings result from 'an involvement with members of an organization over a matter which is of genuine concern to them' (Eden and Huxham, 1996, p. 75). The project's design was perfectly suited to this research methodology as the researcher entered the research site as "one of the team". For example, access was granted to all areas of the company and documents such as previous reports, memos, letters, e-mails, many of a confidential nature, were made available. This enabled the researcher to gain profound insights into the issues surrounding the project, thereby fulfilling the basic criteria of action research.

Action research is primarily a qualitative research method that was first documented by Kurt Lewin (1946). The "classical model of action research" (Elden and Chisholm, 1993) developed by Lewin combined both research and action to solve specific social problems. As Lewin states "research that produces nothing but books will not suffice" (p.35). He called for social scientists to combine both theory building with research on practical problems and argued that the study of social problems is best advanced by introducing changes into the process (i.e., action) and observe the effects of these interventions (i.e., research). Furthermore, action research calls for participation in the process by organisational members. According to Oja and Smulyan (1989) this union of theory and action encourages informed, improved behaviour and promotes social change.

A number of definitions of action research have emerged since the early writings of Lewin (1946). Lewin saw action research as an interactive and cyclical process where the researcher moves from initial analysis, fact-finding and conceptualisation, through to planning, execution and evaluation, and then circling back to fact-finding, to repeat the process again. This process may take a number of iterations to complete. While Lewin was the first to

document action research, Argyris, Putnam and Smith (1987) note that before his death in 1947 he had written only 22 pages specifically discussing action research. This left the door open for subsequent researchers to adapt, elaborate and reinterpret his definition. Dickens and Watkins (1999) suggest that there is no definitive approach to action research with many divergent definitions and methods having been developed since the early writings of Lewin (see Argyris and Schon, 1991; Cunningham, 1993; Elden and Chisholm, 1993; French and Bell, 1984; and Kaplan, 1998). For example, some of the different approaches to action research (labeled “emergent varieties of action research” by Elden and Chisholm, 1993) are “participatory action research”, “action science”, “organisational action research”, “teacher action research”, “innovation action research” and “professional expert action research”. Each of these approaches to action research emphasise different aspects of Lewin’s definition. In addition, they have been applied in numerous research settings that have induced action, focused on the human condition, centred on job analysis, guided organisational change, created innovations, solved problems and developed theoretical knowledge (Dickens and Watkins, 1999).

Irrespective of the action research method adopted, the two essential goals of action research are to improve and involve. The action researcher’s agenda is unequivocally focused on the betterment of the practice, organisation, or society under study. This can be achieved by action researchers studying the problem, developing hypotheses, taking action and then analysing the outcome against the original hypotheses. As noted by Dickens and Watkins (1999), any theory developed from an action research based approach ‘must both solve a practical problem and generate knowledge’ (p.132). The aim of involvement is also a fundamental tenet of action research and is particularly stressed in “participatory action research” where all participants of the study are committed to, and actively involved in, the research from initial analysis, planning, acting, observing and reflecting (McTaggart, 1991).

The method of action research applied in the geographically segmented CPA can be best described as “innovation action research” (Kaplan, 1998). In his article titled “*Innovation Action Research: Creating New Management Theory and Practice*”, Kaplan develops and discusses innovation action research by retrospectively placing his research on ABC and the balanced scorecard under the action research banner. He suggests that this method can be differentiated from the more traditional modes of action research by the focus on the implementation of new, innovative practices in organisations. With innovation action research, researchers actively participate in the implementation of new practices and ‘learn not only about the idea itself and how to improve it, but also about the conditions for successful implementation in organisations’ (Kaplan, 1998, p. 90).

Kaplan (1998) developed an agenda for innovation action research that incorporates the cyclical nature of action research as developed by Lewin. The preliminary element required for an innovation action research study is the identification of an “unmet need”, where existing practice is recognised as being inadequate. The first step in the research cycle is to observe and document innovative practices that may provide solutions to the existing gap in practice. The second step involves teaching and speaking about the innovation to others so that at the end of this step the new innovation or theory has been refined and has become generalisable to a wider number of organisations. The third step involves further disclosure to a wider audience via the writing of articles and books. At the end of this step the researcher/s may receive invitations to implement the innovative practice in new organisations thereby “spreading the word” and creating changes in how organisations function. Kaplan argues that this fourth step can also serve to validate the new theory that has been developed, provide new

learning opportunities and enable the researcher to learn about effective implementation processes for the new practice. Once this first iteration has been completed, the researcher can then embark on a second and then third and so forth, loop around the research cycle. The innovation action research programme, with continual refinements and advancements to the new theory, can ultimately result in the researcher becoming a more skilled practitioner and the new practice being propagated to a wide variety of organisations.

While the innovation action research approach adopted for the geographically segmented CPA case study is based on Kaplan's notion of innovation action research, some modifications to the research cycle have been made. These modifications have been undertaken as Kaplan's innovation action research cycle provides an outline for an overall research agenda, and not a specific innovation action research study. As the case study described effectively falls within the first iteration of Kaplan's research model, it would be misleading to place this research at the same stage as that of Kaplan's ABC and Balanced Scorecard work. Even with the years of research Kaplan has invested in studying activity based costing, he notes that he is only up to the beginning of the third iteration of the research cycle.

The innovation action research approach that has been adopted for this study is diagrammatically depicted in Figure 1 below. While the steps outlined have been adapted from Kaplan's research cycle, the innovation action research model also incorporates aspects of Lewin's traditional action research structure. In the first instance the researcher was invited to implement a geographically segmented CPA in the company after initial contact with a member of the company. After further observations of the use of CPA in other organisations and the induction phase during which the researcher met with key organisational players of the subject company, the researcher, together with the organisation's key players planned the implementation of the CPA. The next step in the cycle was the implementation of the geographically segmented CPA system. The final two steps involve the observation, analysis and evaluation of the geographically segmented CPA system.

Insert Figure 1 Here

It should be noted that in keeping with Kaplan and Lewin, the innovation action research process presented in Figure 1 is an iterative process. The feedback and learning, and reflection loops occurred throughout the study where the researcher and participants would stop and reflect on the techniques adopted and make modifications to the CPA system as it developed. This learning and feedback process is best exemplified by the three presentations that were given to the project's steering committee. Preparation for each presentation required the researcher, together with the project's participants, to take time to reflect on not only the techniques utilised but also the process of implementation. These presentations also provided invaluable feedback as the current status of the project was discussed, and a number of constructive suggestions and comments were made. These sessions facilitated and improved the learning of not only the researcher, but also the organisation's members involved in the study. This highlights the extent to which the implementation of a CPA system can promote significant organisational learning.¹

¹ Applying the iterative cycle of the research agenda illustrated in Figure 1 to the author's current customer accounting research program implies additional implementations of customer accounting practices in other organisations or more customer accounting analyses undertaken in the company involved in this study. This will result in more "loops" around the research cycle.

This section has provided an overview of the innovation action research methods adopted for the study and grounded in the approach taken in the model advocated by Kaplan (1998). In the next section an overall approach to the implementation of the geographically segmented CPA is presented.

4. Overall Approach to the CPA System

The approach adopted to implement the segmental CPA system is depicted in Figure 2. This implementation model was developed from the innovation action research model described above and depicted in Figure 1. Each of the implementation steps corresponds to a stage of the action research cycle. In addition, the feedback and learning, and reflection pauses are incorporated into the implementation process as feedback loops that take place after each step. The feedback loops allow for a period of reflection, consideration and provide for time to refine the system if needed.

Insert Figure 2 Here

The implementation process should begin with an initial site and project assessment, and incorporate a consideration of the customers (i.e., current, active) to be included in the customer base for analysis, the base and method of segmentation required (i.e., segmentation splits based on age, geography, revenues, size, etc.), and the revenues and costs to be incorporated in the CPA. The next step in the implementation process is to develop the segmentation model. The manner in which the customer base is split depends upon the objectives of management and the information needed from the analysis. For example, management might believe that profit differences exist among customers due to size. That is, there are lower costs involved in servicing large customers who place large orders, than smaller customers who place smaller orders. Management may decide that segmenting customers based on size (Juras and Dierks, 1994) may provide useful insights into customer profitability.

The third stage requires the design of the segmental CPA. In this step the company's operations are inspected and the costs and revenues that can be directly traced to a customer, and those that cannot be, are identified. In adopting an ABC approach, the specific activities of the company's operations and what drives these activities must be ascertained. This stage also involves the acquisition of data needed to conduct the segmental CPA, and if the requisite data is not available then other strategies must be employed, such as the use of surveys or the development of new databases. If physical data is not available for identified cost drivers, proxies may also be considered as potential cost driver substitutes. Once all customer, revenue, cost, cost pools and cost driver data is gathered the segmental CPA is calculated by inputting the data into the segmental CPA model.

The fourth stage concerns an analysis and evaluation of the segmental CPA results. Consideration is given to the overall profitability figures, recalling that the overall results will depend upon the different approaches adopted in the design stage of the segmental CPA implementation process. In addition, analysis should be undertaken in regard to data availability, data collection methods, data reliability and data validity issues. In the fifth and final step, recommendations are made to improve future segmental CPA. These recommendations may involve revenue, cost and driver data collection method refinements,

improving current customer profitability reporting and future approaches that might be taken in further developing the analysis.

5. Implementation of the CPA System

The case study was conducted for the main Product Division of a major Australian telecommunications company. “The Division” provides telecommunications services to over 7.5 million customers Australia wide.² It has a strong customer focus, delivering a wide range of products in an increasingly competitive market. The Division conducts a segmental CPA analysis based on different lifestyle groupings every six months within the reporting system, and has a committee focused on customer profitability called the “Customer Profitability Reporting (CPR) Steering Committee”.³ The two main objectives for a further development of the customer profitability reporting system was to provide a segmental CPA analysis of its customers based on a predetermined geographic split and to ultimately develop a computer system that would allow the Company to maintain an ongoing geographically segmented CPA reporting regime. The Division’s need for this analysis rose from an apparently widely held management perception that customers in different geographic areas across Australia consumed the Division’s resources to differing degrees, thereby affecting customer profitability. Ultimately, the geographically segmented CPA would provide any evidence to support this perception of cost consumption differences and offer the Division a base for improved decision making in relation to ongoing marketing strategies, and the potential for new pricing, product and cost management strategies.

5.1 Initial site assessment

After the initial contact was made with the researcher, an induction process ensued which included meetings with members of the CPA team at which an overview of the company structure was given, the Division’s information systems were described, copies of the Division’s financial statements, prior studies involving segmentations of the Division’s customer base, and previous customer-lifestyle segmental CPA reports were provided. During this stage of the implementation process it was decided that only customers that had received a bill in the past six months (billing is executed on a monthly or quarterly basis) were considered current, active customers and were the basis of the segmental CPA analysis.

Concurrently, an analysis of the revenues and costs of the Division was conducted on the previous six months of financial data that was to be the basis of the CPA analysis. The Division utilised the financial accounting system (FINTEL) to identify the costs to be allocated. As the accounting system had over 4,000 cost items, it was evident that an aggregated level of analysis would be necessary. This was achieved by summarising the 4,000 cost items into three main cost headings with up to ten lower level cost groupings within each. This approach represented an adaptation of previous CPA analyses conducted by the Division. Furthermore, each main area of activity in the Division had separate information systems that were not integrated across the Division as a whole. In addition, a number of these area

² Due to the sensitivity of the data collected, the management of the company division has requested anonymity. Therefore, the research site is referred to as “the Division” throughout this research paper. Furthermore, much of the financial and numerical data used in the segmental CPA analysis is masked, the findings and all company specific terms have been altered to mask the Division’s identity and maintain anonymity.

³ The customer-lifestyle segmental CPA is based on customers’ age, and five age groupings have been identified (to be consistent with the Division’s terminology, these age groupings are referred to as lifestyle groupings).

specific information systems were in the process of being upgraded or changed. It was recognised by the team that attempting to obtain relevant and timely data from these systems was likely to be problematical.

5.2 *Develop segmentation model*

The second stage of the implementation process involved identifying the basis of segmentation and then selecting a method of segmentation that was reliable. A geographical split of the Division's customer base was decided upon as the segmentation basis and two methods of segmentation, one based on postcodes and one based on telephone exchanges, were identified as being potentially reliable. The segmentation method sought to provide an analysis of customers in a manner appropriate for supporting management decision making and also it had to be done in a manner allowing reliable identification of revenues and costs with segments. It was desirable that costs and revenues could be directly traced to geographical segments, thereby reducing the need for the use of sampling techniques in gathering data in relation to customer cost pools and cost drivers. This criterion used in selecting the basis for segmentation is consistent with the Division obtaining a robust geographical-based CPA that would provide reliable findings, and could act as the basis for any subsequent analyses.

A further prerequisite of any segmentation basis chosen was that the data that would provide the basis for the segmentation was currently available. After discussions with the CPA team in regard to the customer data held, two segmentation strategies were identified. The first segmentation strategy could be undertaken based on telephone exchanges. Each customer telephone number could be traced to a telephone exchange, and then each exchange allocated to a location based on the Australian Bureau of Statistics (ABS) classification of "urban centres/localities". The ABS's 1996 census data could then be used to allocate all of the urban centres/localities to one of the five geographic categories ("metropolitan", "major urban", "minor urban", "major rural" and "minor rural") which for the purposes of the geographically segmented CPA analysis were called "population density sectors" (PDS). This segmentation basis was preferred, as it has the potential to provide a more realistic split of the customer base in a manner more closely reflecting the core business activities of the Division.

The second approach considered was to segment based upon customers' postcodes. This method involved identifying all Australian postcodes with the ABS's urban centres based on population figures, and then allocating all urban centres to the five PDS's. Both of these segmentation approaches would allow all customers to be traced to the appropriate PDS in the Division's customer database (whether by telephone number or postcode).

The first segmentation strategy of the exchange method was chosen as the basis for segmentation. Data was requested from another area of the Division that included all exchanges and their corresponding telephone number ranges. While there was some delay in obtaining the file, it was eventually received four weeks later. In the meantime all Australian centres/localities were allocated to the five PDS's, based on ABS 1996 urban centre/locality census data. Exchanges were then identified with these locations and these were allocated to sectors. The sector exchanges were then reworked in line with the Division's service delivery areas and exchange regions. As costs for some cost items were extracted at the depot level, the final step in the PDS model's development involved reworking sector exchanges in line with depots. At the completion of the segmentation exercise, the Division's customer database of over seven million customers was merged with the exchange PDS database. Following this

exercise each customer was identified with one of the five PDS's. The final PDS model statistics are presented in Table 2.

Insert Table 2 Here

5.3 Design segmental CPA system

After the exchange model had been finalised and accepted by the CPR steering committee, the study then moved into the third phase of designing the segmental CPA system. This step in the implementation process took eight weeks to complete and involved the production of the final report together with the design of the computer system that not only generated the report for the study, but also provided the Division with a capability to conduct further geographically segmented CPA's in the future.

Firstly, the identification and analysis of the revenues was conducted. This was a fairly straightforward procedure, as actual customer revenues from the Division's billing database were able to be identified and directly traced to customers in the five PDS's. Secondly, an analysis of the Division's costs was performed. Due to the large number of cost classifications identified, an aggregated cost structure was adopted. The cost analysis was broken down into three cost areas. These three cost areas were based on the main activities performed by the Division. The first grouping of costs to be analysed was identified as '*Sales, Marketing, Support and Other Costs*' and included thirteen sub-categories such as order processing costs, billing costs, bad debts, and customer marketing costs. The second cost analysis priority was the '*Field Service and Customer Access Network (CAN) Infrastructure Costs*'. Included in this cost category were eleven sub-categories such as service work costs, repair costs, service scheduling/dispatch costs and network depreciation costs. The final cost priority grouping was '*Network Infrastructure Costs*' which was identified and grouped based upon customer usage types such as local, interstate or international calls, minutes or revenue driven costs.

In addition to the geographical segmentation based on the five PDS's, the Division also required that customers in each PDS were further segmented to the three spend-levels of "low", "medium" and "high" based upon the revenue generated by each customer. The cut off points for the allocations were based on the upper and lower quartiles, with the "low" threshold set at \$400 revenue per six months, and the upper quartile threshold set at \$800 revenue per six months. The medium spend level was defined by the two middle quartiles, i.e., between \$400 and \$800 revenue per six months.

Subsequent to data gathering and analysis, the geographically segmented CPA moved into the next phase which involved developing the model relationships. This phase revolved around the identification of the cost drivers for each cost item. An overview matrix of the each of the cost pools of two cost groupings are presented in Table 3 and Table 4.

Insert Table 3 and Table 4 Here

Table 3 and Table 4 present the cost pool subcategories of the two cost groupings of '*Sales, Marketing, Support and Other Costs*', and '*Field Service and Customer Access Network (CAN) Infrastructure Costs*', together with the drivers used to allocate costs to sectors, the cost data collected, a comment on the relative reliability of the data collected, and also data collection recommendations. Due to the number of cost pools identified in Table 3

and Table 4, only the directory assistance costs and field repair costs will be discussed to provide an example of the technical detail of the geographically segmented CPA.

The directory assistance costs were allocated across the sectors and spend-level sub-segments by directory assistance calls. As actual data for the six months ended December 1998 was unavailable, a 35-day sample for May 1999 was obtained for all directory assistance calls by exchange. It was recommended that the directory assistance calls data be gathered in the future for the six months of the relevant reporting period. Significantly more directory assistance calls were received per customer in the metropolitan sector, and therefore greater costs were also incurred per customer in this sector. Figure 3 presents the average directory assistance costs per customer and the average directory assistance calls per customer for each sector and spend-level.

Insert Figure 3 Here

Depot level costs for field repairs were obtained for the six months to December 1998. These costs were then allocated across the sectors and spend-level sub-segments by the number of CAN field visits. Field visits was chosen as the cost driver of these costs as in nearly all cases when the Division’s service personnel go out into the field it is to make repairs. The actual field visits data was gathered for the six-month period ending December 1998, and was sourced from the service area computer system.

Figure 4 presents the field repairs cost per customer across the sectors and spend-levels, together with the field visit driver volumes per customer. The field repair costs per customer were significantly different across the sectors. A field repair cost 580 percent more in the Minor Rural sector compared to the Metropolitan sector. Furthermore, cost driver volumes per field visit also increased across the sectors with more field visits occurring in the Minor Rural sector than the other four sectors.

Insert Figure 4 Here

The ‘*Network Infrastructure Costs*’ category was the third cost priority grouping and comprised fifteen cost items related to the network costs associated with the main products of the Division. These costs were identified as being minutes driven, calls driven or revenue driven costs. The main activity associated with these costs was product usage. Therefore, to assign these costs, product usage data for the relevant period was used to allocate these costs to sectors and spend-levels. The usage data for the allocation of these costs was obtained from the network area and was considered reliable as actual customer usage, in terms of minutes, number of calls and the relevant product revenues was acquired for the six months to December 1998.

The Division also required that corporate overheads be included in the analysis. The Division was interested in the ‘bottom-line’ profitability of its customer segments and therefore required that the non-attributable corporate overheads be assigned to sectors and spend-level groupings. In explaining why corporate overheads were to be included it was suggested by committee members that employees of the different departments within the Division would better understand the final CPA report if corporate overheads were included. Due to the arbitrary nature of any allocation of corporate overheads, all relevant reports derived from the segmental CPA system included both pre and post corporate overhead results (for example, see Figure 6). As these overheads are charged to the division by the

Division's corporate headquarters, there is no discernible activity involved that would enable the identification of a cost driver to allocate these costs. It was therefore decided that the most appropriate method to allocate the corporate overheads was on the basis of the number of customer accounts per sector and spend-level groupings.

The next step in the design stage of the process involved testing and verifying the results produced. This step was concerned with ensuring that the results of the segmental CPA were valid and that there were no "bugs" in the computer system developed. The system was modeled using the Microsoft Excel programme and comprised one file consisting of a number of worksheets. A diagrammatic depiction of the segmental CPA system is illustrated in Figure 5.

Insert Figure 5 Here

Figure 5 illustrates the system in reverse order i.e., the cost data was entered into the final worksheet in the file. The revenue and cost data was sourced directly from the Division's six months ended December 1998 financial statements. The driver data was obtained from a myriad of sources. The sector by spend-level data was developed from the preceding three data sheets via a series of formulas that used the driver data to allocate customers' costs to the sectors and spend-levels. Data was extracted from this sheet via the use of formulae that enabled the automatic generation of reports and contribution statements. These findings and reports were further used to develop a number of graphs for ease of interpretation. Macros were also developed to allow ease of movement from one area of the system to another.

After the computer system had been developed and the final report was completed, the case study moved into the final stages. The final stages involved analysing the results of the geographically segmented CPA analysis, evaluating the overall case study and making recommendations to management in regard to potential improvements to the Division's customer profitability reporting, and incorporating the segmental CPA system into the Division's reporting systems so that ongoing segmental profitability analysis is conducted. These final stages of the case study are described in the following sections.

5.4 Analyse results

The main finding of the geographically segmented CPA analysis was that all sectors showed a positive net contribution, although customer profitability declined across the sectors with Metropolitan customers showing the largest profitability and Minor Rural customers contributing the smallest profit. This finding needs to be considered in light of the problems involved in reliably allocating the '*Customer Access Network (CAN) Infrastructure*' costs of depreciation, planning and design and upgrade and replacement costs across the five sectors. As the Division is charged a lump sum for each of the three CAN costs at the corporate level, a number of inquiries were made as to how these costs are calculated and charged to the Division. After a number of contacts were made with staff across the Division, it was finally discovered that the method for calculating the division's share of the depreciation, planning and design, and upgrade and replacement costs could not be incorporated into a model to allocate these costs on a geographical basis. Therefore, further discussions were held with personnel from a number of different areas of the Division to source any information that may assist in allocating these costs across the sectors. Subsequently, a number of strategies were considered. Unfortunately, for most of these strategies, the required data was either not kept by the Division or could not be obtained. The final strategy adopted by the team was to

develop an allocation model based on exchange lines. The final CAN cost allocation model incorporated the average length of line per exchange by the different line densities. This enabled a weighting to be calculated that highlighted the greater costs incurred in the rural sectors.

Insert Figure 6 Here

Figure 6 graphically illustrates the contributions per customer account by spend level within each population density sector. From a sector by spend-level perspective, all low spend customers (less than \$400 revenue) were found to have a negative net contribution that increased across the sectors. Minor Rural medium spend customers (between \$400-\$800 revenue) were also found to provide a negative net contribution. Furthermore, while no significant difference was found in average revenue per customer across each spend-level by sector, Minor Rural customers' average revenue for the six month period was slightly higher than that provided by the other sectors.

In terms of the three main cost categories, the '*Sales, Marketing, Support and Other Costs*' per customer were found to be fairly evenly spread across the sectors. From a spend-level perspective, it was apparent that increasing costs per customer segment were incurred as the spend-level increased. Minimal variation was shown across the sectors for '*Network Infrastructure Costs*'. It was found that the main driver of cost differentials and therefore profitability variation across the five sectors were the '*Field Service and CAN (Customer Access Network) Infrastructure Costs*'. For all cost items in this category the greatest cost per customer was found to arise for the Minor Rural sector. The lowest cost per customer was incurred in the Metropolitan sector, with costs per customer steadily increasing across the five sectors. The increasing costs across the five sectors were caused mainly by a significant difference in driver unit costs per new activation, in-place activation, equipment fault and field service visits across the five sectors.

5.5 Evaluate segmental CPA model and make recommendations

A number of recommendations were made concerning how the Division's current geographically segmented CPA reporting could be improved. These recommendations related primarily to improving the data gathering techniques involved in obtaining cost drivers to allocate some of the cost items. Furthermore, the CPA team developed improved methods for allocating some cost items. It was recommended that these improved allocation bases be incorporated in the Division's other CPA reporting based on lifestyle segmentation.

The main recommendations made to the Division for improved data gathering techniques are outlined in Table 3 and 4. The final column of each table summarises the suggestions made for improved data gathering practices for each cost driver. For example, the reliability of the driver data for call centre calls was considered low with only three call centres sampled and only one month of data (that was gathered eighteen months prior to the analysis) provided. It was recommended that data for all calls to call centres across Australia by exchange for six months were gathered. The data reliability for the CAN costs (depreciation, planning and design, and upgrade and replacement) driver, presented in Table 4, was considered to have only a medium reliability. As discussed previously, the allocation model was not considered to be an optimal model, and was seen to have limited reliability. Unfortunately, due to time constraints placed on the geographically segmented CPA analysis

the CAN allocation model was accepted with some reservations by the CPA team. It was recommended that further work be undertaken to obtain a more reliable allocation basis for the three CAN costs. These improvements in data gathering techniques would improve the reliability of the cost driver data, the allocation of costs to each of the sectors and ultimately the validity of the overall geographically segmented CPA results.

For the Division's future reporting of customer profitability it was recommended that the products and services provided by the company's other business segments be incorporated into all CPA reporting. As the CPA reporting is only conducted for one division of the company, the current picture of customer profitability represents only a partial perspective, as many customers may be providing additional contribution through their usage of the company's other products and services. Some customers that are currently viewed as unprofitable may, in reality, be providing a positive contribution to profits when a more holistic approach to customer profitability is adopted. In addition to these recommendations, the researcher also suggested that the Division consider conducting a customer valuation analysis as a means of identifying valuable customers over the lifetime of trading relationships. This type of analysis may shed additional light on customer profitability, as some customers that are currently unprofitable may be profitable over the longer term.

5.6 Feedback loops

The feedback loops incorporated into the implementation process were typified in the case study by three presentations made by the CPA team to the "Customer Profitability Reporting (CPR) Steering Committee", consisting of seven high-level accounting, finance and marketing managers of the Division. The presentations made to the committee provided the CPA team with valuable time to reflect upon the current status of the geographically segmented CPA analysis. In preparing for each presentation, the CPA team took time to reflect on not only the techniques and methods utilised but also the overall process of implementation.

The first two presentations provided the steering committee with progress updates of the project. The first presentation was conducted after the segmentation model had been developed and included an overview of the segmentation model, identification of the cost analysis priorities, the technical aspects of the data collection methods, problems encountered to date and the further steps necessary for the completion of the project. The second presentation was conducted after the geographically segmented CPA system had been designed. An overview of the breakdown of customers per sector, the data collection methods, and interim the findings together with the limitations of the analysis were provided. The information provided by the CPA team to the committee members was well received. The committee members made a number of useful suggestions, and also provided a number of contacts within the organisation that would potentially prove useful. These pauses in the implementation process allowed the CPA team to stop and take stock of the progress to-date, incorporate suggestions made and refine the geographically segmented CPA system.

The third and final presentation, which represents the final feedback loop in the implementation model, was made to the CPR steering committee after the analysis of the results. It was at this meeting that the CPA team presented the final geographically segmented CPA report. The presentation focused on the main findings of the analysis including a full briefing of the limitations of the project due to data access/gathering problems. The continuing commitment to the geographically segmented CPA analysis was evident by

comments made by the committee members. One such comment noted was “I wouldn’t like this stuff to be put on the shelf and gather dust. I think what we need to do is go to the next stage of trying to implement some system processes so that we can report regularly”. This illustrates how the presentations facilitated and improved the learning of not only the CPA team, but also the committee members involved in the case study.

6. Discussion and Conclusion

The purposes of this paper were to develop a general model for the implementation of CPA and to document the process of a successful implementation of a segmental CPA using this model in a telecommunications company. The general implementation model applied in this case study is illustrated in Figure 2 and was developed from the innovation action research agenda of the study. The successful implementation of the segmental CPA system was documented in terms of the five major steps of the implementation model from initial site assessment, development of the segmentation model, design of the segmental CPA system, analysis of the results and final system evaluation.

Analysis of the results of the geographically segmented CPA identified differentials in profitability across the PDS’s. While overall the five sectors show positive net contributions, profitability steadily declines across the sectors with Metropolitan customers showing the largest profit and Minor Rural customers contributing the smallest profit. In addition, further segmenting the five PDS’s by customer spend-levels, revealed all low spend customers showing a negative net contribution that increased across the sectors from the Metropolitan sector (showing the smallest negative net contribution) to the Minor Rural sector (showing the largest negative net contribution). Although these findings of the geographically segmented CPA are not as significant as the results of other CPA case studies reviewed (for example Cooper and Kaplan, 1991a; Foster et al., 1996; Storbacka, 1997; Mulhern, 1999; Noone and Griffin, 1999; van Raaij et al., 2003), they do support the results of these studies that show differentials in cost consumption across a company’s customer base.

As noted in relation to the final system evaluation, there were limitations to the analysis that should be taken into consideration when interpreting the results of the geographically segmented CPA. Apart from the number of data gathering problems, issues arose in relation to gaining access to data held in systems managed in different interstate areas of the company. Requested data was either not provided or provided after lengthy delays. For example, on two occasions data was provided too late to be included in the geographically segmented CPA model developed. This caused a number of time delays as alternative cost drivers had to be sourced or other avenues of accessing the relevant data had to be investigated. In some instances, this required the acceptance of cost drivers and allocation methods that were not the CPA team’s optimal choice. There were also issues that arose with the gathering of the data from multiple sources across the company in that the accuracy of some of this data could not be verified. At times the amount of data gathered required considerable resources, such as data processing capabilities, to analyse and reduce to a manageable amount. The potential exists for diminished reliability of the CPA due to the very large amounts of data analysed. These concerns with the segmental CPA analysis highlight the need to take care when making decisions based on results that are not yet proven to be reliable. While the recommendations made by the CPA team will resolve these issues and if adopted, overcome these problems in future analyses, management must be cautious when making decisions based on first iteration results.

The geographically segmented CPA conducted is a ‘retrospective’ analysis (Storbacka, 1997; Jacobs, Johnston and Kotchetova, 2001). A retrospective analysis takes “a historical perspective; it investigates what has been the absolute and relative profitability of each customer or customer group over some defined past time period” (Jacobs et al., 2001, p. 355). While this type of analysis is often a valuable first step in an ongoing customer profitability program, it is with ‘prospective’ analyses (for example CVA) that even greater managerial knowledge can accrue (Storbacka, 1997). One of the final recommendations made to the CPR steering committee was the implementation of a CVA analysis as a means of providing a greater understanding of customer profitability over the lifetime of trading relationships. Although the committee members considered that valuing the customer base over the lifetime trading relationship was a valuable exercise, one reservation in conducting this type of analysis was raised:

“...it is only any use if we have a good predictive tool which predicts which of the young segment are going to move through to become profitable older segments. What we don’t want to do is increase our acquisition costs for these customers that then go into the terminally credit challenged basket and never make money for us. I don’t think we can assume that simply because all young customers have potentially got a lifetime with us that therefore over that time they will become more profitable. We think this is a sensible idea but we need to accompany it with some predictive tool”.

These comments suggest that further academic research is needed to provide models of longer-term customer relationships so that reliable prospective customer profitability analyses can be conducted. This research would be best accomplished by the use of case study methods that unite academic research with important concerns in practice.

References

- Argyris, C., R. Putnam, and D. Smith, 1987, *Action Science: Concepts, Methods and Skills for Research and Intervention* (Jossey-Bass, San Francisco).
- Argyris, C. and D. Schon, 1991, Participatory Action Research and Action Science Compared, in W.F. Whyte (Ed), *Participatory Action Research* (Sage, Newbury Park).
- Atkinson, A.A., R. Balakrishnan, P. Booth, J.M. Cote, T. Groot, T. Malmi, H. Roberts, E. Uliana, and A. Wu, 1997, New Directions in Management Accounting Research, *Journal of Management Accounting Research* 9, 79-108.
- Cooper, R. and R.S. Kaplan, 1991a, Kanthal (A), in *The Design of Cost Management Systems: Text, Cases and Readings* (Prentice-Hall Inc, Englewood Cliffs, New Jersey).
- Cooper, R. and R.S. Kaplan, 1991b, Manufacturers Hanover Corporation: Customer Profitability Report, in *The Design of Cost Management Systems: Text, Cases and Readings* (Prentice-Hall Inc, Englewood Cliffs, New Jersey).
- Cooper, R. and R.S. Kaplan, 1991c, Winchell Lighting, Inc. (A), in *The Design of Cost Management Systems: Text, Cases and Readings* (Prentice-Hall Inc, Englewood Cliffs, New Jersey).
- Cunningham, J.B., 1993, *Action Research and Organizational Development* (Praeger, Westport, CT).

- Dickens, L. and K. Watkins, 1999, Action Research: Rethinking Lewin, *Management Learning* 30, 127-140.
- Eden, C. and C. Huxham, 1996, Action Research for Management Research, *British Journal of Management* 7, 75-86.
- Elden, M. and R. Chisholm, 1993, Emerging Varieties of Action Research: Introduction to the Special Issue, *Human Relations* 46, 121-142.
- Foster, G., M. Gupta, and L. Sjoblom, 1996, Customer Profitability Analysis: Challenges and New Directions, *Cost Management* Spring, 5-17.
- Foster, G. and S.M. Young, 1997, Frontiers of Management Accounting Research, *Journal of Management Accounting Research* 9, 63-77.
- French, W. L. and C.H. Bell, 1984, *Organization Development: Behavioral Science Interventions for Organization Improvement*, 3rd Edition, (Prentice Hall Inc, Englewood Cliffs, New Jersey).
- Guilding, C. and L. McManus, 2002, The Incidence, Perceived Merit and Antecedents of Customer Accounting: An Exploratory Note, *Accounting, Organizations and Society* 27, 45-59.
- Jacobs, F. A., W. Johnston, and N. Kotchetova, 2001, Customer Profitability: Prospective vs. Retrospective Approaches in a Business-to-Business Setting, *Industrial Marketing Management* 30, 353-363.
- Juras, P. E. and P.A. Dierks, 1994, Student Case Competition Case: Blue Ridge Manufacturing, *Management Accounting* December, 57-59.
- Hopwood, A.G., 1978, Toward an Organizational Perspective for the Study of Accounting and Information Systems, *Accounting, Organizations and Society* 3, 3-13.
- Hopwood, A.G., 1979, Editorial, *Accounting, Organizations and Society* 4, 145-147.
- Hopwood, A.G., 1983, On Trying to Study Accounting in the Contexts in which it Operates, *Accounting, Organizations and Society* 8, 287-305.
- Kaplan, R.S., 1983, Measuring Manufacturing Performance: A New Challenge for Managerial Accounting Research, *The Accounting Review* October, 686-705.
- Kaplan, R.S., 1984, The Evolution of Management Accounting Systems, *The Accounting Review* 59, 390-418.
- Kaplan, R. S., 1998, Innovation Action Research: Creating New Management Theory and Practice, *Journal of Management Accounting Research* 10, 89-118.
- Lewin, K., 1946, Action Research and Minority Problems, *Journal of Social Issues* 2, 34-46.
- McTaggart, R., 1991, Principles for Participatory Action Research, *Adult Education Quarterly* 41, 168-187.
- Mulhern, F. J., 1999, Customer Profitability Analysis: Measurement, Concentration and Research Directions, *Journal of Interactive Marketing* 13, 25-40.
- Noone, B. and P. Griffin, 1999, Managing the Long-Term Profit Yield from Market Segments in a Hotel Environment: A Case Study on the Implementation of Customer Profitability Analysis, *Hospitality Management* 18, 111-128.
- Oja, S. N. and I. Smulyan, 1989, *Collaborative Action Research: A Developmental Approach* (Falmer Press, Philadelphia).

- Quain, W. J., 1992, Analyzing Sales-Mix Profitability, *The Cornell Hotel Restaurant Administration Quarterly* April, 57-62.
- Shields, M.D., 1997, Research in Management Accounting by North Americans in the 1990s, *Journal of Management Accounting Research* 9, 3-62.
- Storbacka, K., 1997, Segmentation Based on Customer Profitability – Retrospective Analysis of Retail Bank Customer Bases, *Journal of Marketing Management* 13, 479-492.
- Struchfield, N. and B.W. Weber, 1992, Modeling the Profitability of Customer Relationships: Development and Impact of Barclays de Zoete Wedd's BEATRICE, *Journal of Management Information Systems* 9, 53-76.
- Van Raaij, E.M., M.J.A. Vernooij, and S. van Triest, 2003, The Implementation of Customer Profitability Analysis: A Case Study, *Industrial Marketing Management* 32, 1-11.

Table 1*Summary of published CPA case studies*

Author	Year	Journal/ Book	Company Description	Type of Analysis	Level of Analysis
Cooper and Kaplan	1991a	<i>The Design of Cost Management Systems</i>	Kanthal: A heating element manufacturer ^a	CPA applying ABC techniques to selling and administrative expenses	Individual customer
Cooper and Kaplan	1991b	<i>The Design of Cost Management Systems</i>	Manufactures Hanover Corporation: U.S. commercial bank ^a	CPA of all products sold by the bank	Individual customer
Cooper and Kaplan	1991c	<i>The Design of Cost Management Systems</i>	Winchell Lighting, Inc: A lighting manufacturer ^a	CPA applying ABC techniques to marketing costs	Marketing channels
Quain	1992	<i>The Cornell HRA Quarterly</i>	Hypothetical hotel	CPA of variable costs and multiple revenue streams	Customer segments
Struchfield and Weber	1992	<i>Journal of Management Information Systems</i>	Barclays de Zoete Wedd: A London securities firm	CPA applying ABC to all revenue and expense items	Individual customer
Juras and Dierks	1993	<i>Management Accounting</i>	Blue Ridge Manufacturing ^a	CPA applying ABC to marketing, distribution and customer service costs	Customer segments
Storbacka	1997	<i>Journal of Marketing Management</i>	Two national Nordic banks	CPA based segmentation of customer base	Customer segments
Mulhern	1999	<i>Journal of Interactive Marketing</i>	Three sales territories of a pharmaceutical manufacturer	CPA of only revenues and variable costs	Individual customer
Noone and Griffin	1999	<i>International Journal of Hospitality Management</i>	“The Site”: An Irish hotel	CPA applying ABC to revenue and expense items	Customer segments
van Raaij, Vernooij and van Triest	2003	<i>Industrial Marketing Management</i>	National sales office of an industrial cleaning firm	CPA applying ABC to revenue and sales costs	Individual customer and customer segments

^a = management accounting orientated case study

Figure 1

Innovation action research model for the case study

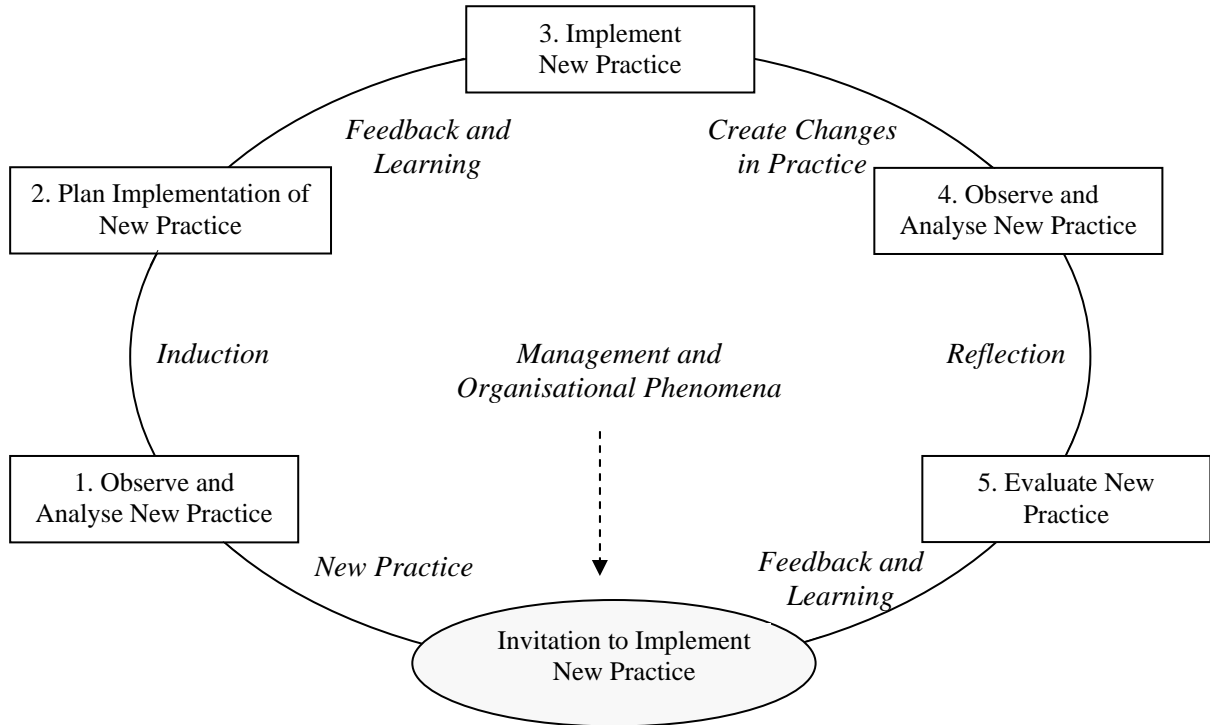


Figure 2

Segmental CPA implementation process

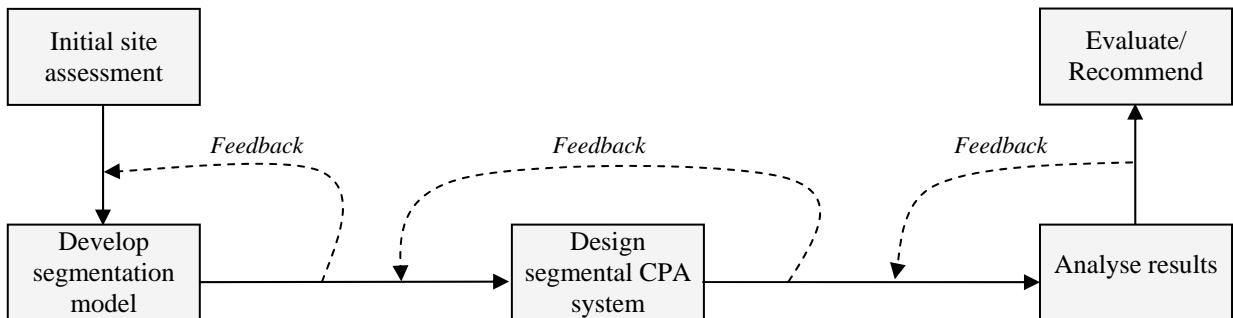


Table 2*Population density sector segmentation model*

Population Density Sector	Sector Criteria	Number of Locations	Average Population per Location	% of Population	Number of Exchanges	% of Exchanges
Metropolitan	> 500,000	5	1,901,516	59%	622	13%
Major Urban	50,000-500,000	18	131,065	15%	373	7%
Minor Urban	10,000-50,000	93	20,289	12%	578	11%
Major Rural	2,500-10,000	253	4,765	8%	523	10%
Minor Rural	<2,500	1,299	803	6%	2,954	59%

Table 3*Summary of data gathering methodology and issues arising for the 'Sales, Marketing, Support and Other Costs'*

Cost Item	Cost Driver	Cost Data Collected	Data Reliability	Data Gathering Recommendations
(1) Call Centre Activities	Call Centre Calls	One month sample	Low	Call Centre calls by exchange
(2) Bill Processing	Bill Sheets	Actual to Dec. 98	High	Data capture adequate
(3) Bill Enveloping and Mailing	Bills	Actual to Dec. 98	High	Data capture adequate
(4) Bill Receipting	Bills	Actual to Dec. 98	High	Data by bill payment type by cost
(5) NTC Activities	NTC calls	Actual to Dec. 98	High	Data capture adequate
(6) Agency Sales	Agency Commissions	Actual to Dec. 98	High	Data capture adequate
(7) Order Processing	Orders Processed	Actual to Dec. 98	High	Data capture adequate
(8) Complaints	Complaints	Actual to Dec. 98	High	Data capture adequate
(9) Credit Management	Delinquent Accounts	Point-in-time current	Medium	Data gathered for reporting period
(10) Bad Debts	Bad Debts	Point-in-time April 99 write off data	Medium	Match to later months' write off data
(11) Directory Assistance	Directory Assistance calls	35 day sample (May 1999)	Medium	6 months data gathered for reporting period
(12) Operator Assisted Calls	Operator Assisted Calls	1 week sample (w/e 13/8/99)	Medium	6 months data gathered for reporting period
(13) Customer Marketing	Lifestyle CPR splits by accounts	Actual to Dec. 98	High	Data capture adequate

Table 4

Summary of data gathering methodology and issues arising for the 'Field Service and Customer Access Network Costs'

Cost Item	Cost Driver	Cost Data Collected	Data Reliability	Data Gathering Recommendations
(1) New Activations	New Activations	Actual to Dec. 98	High	Data capture adequate
(2) In-Place Activations	In-Place Activations	Actual to Dec. 98	High	Data capture adequate
(3) Adds, Moves and Changes	Service Activation Revenue	Actual to Dec. 98	High	Data gathered for Adds, Moves and Changes by exchange
(4) Customer Equipment Work	Customer Equipment Faults	Actual to Dec. 98	High	Data capture adequate
(5) Fault Reporting	Faults Reported	Actual to Dec. 98	High	Data capture adequate
(6) Fault Testing	Faults Tested	Actual to Dec. 98	High	Data capture adequate
(7) Field Repairs	Customer Access Network field Visits	Actual to Dec. 98	High	Data capture adequate
(8) Service Scheduling/ Dispatch	Service Orders	Combination of activation and equipment faults; Actual to Dec.98	Medium	Service orders by exchange
(9) CAN – Depreciation	CAN allocation model	Current	Medium	Further work required to obtain more reliable allocation basis
(10) CAN – Planning and Design	CAN allocation model	Current	Medium	Further work required to obtain more reliable allocation basis
(11) CAN – Upgrade and Replacement	CAN allocation model	Current	Medium	Further work required to obtain more reliable allocation basis

Figure 3

Directory assistance cost driver volumes and cost per customer by spend level within each population density sector

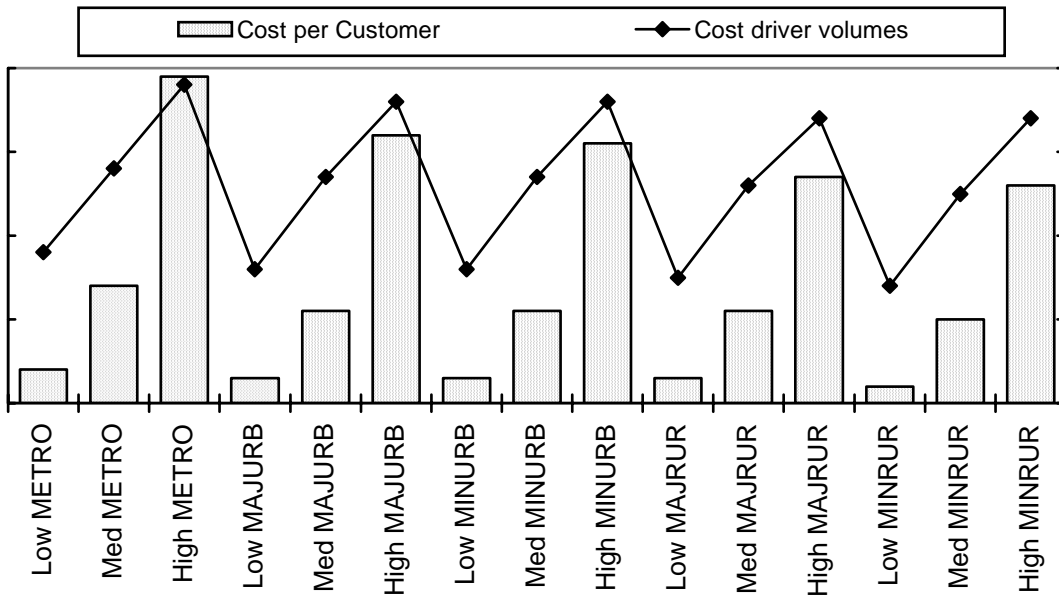


Figure 4

Field repair cost driver volumes and cost per customer by spend level within each population density sector

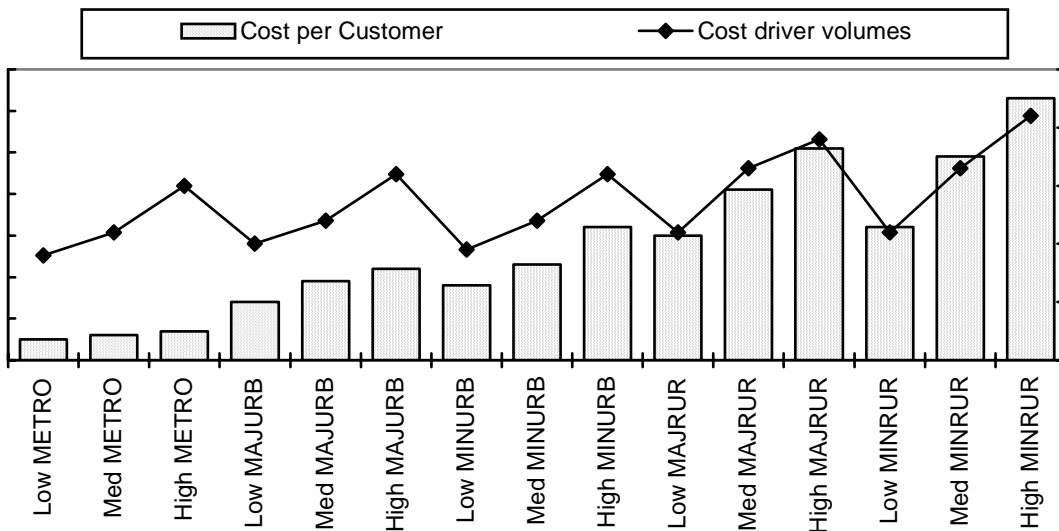


Figure 5

Segmental CPA computer system diagramme

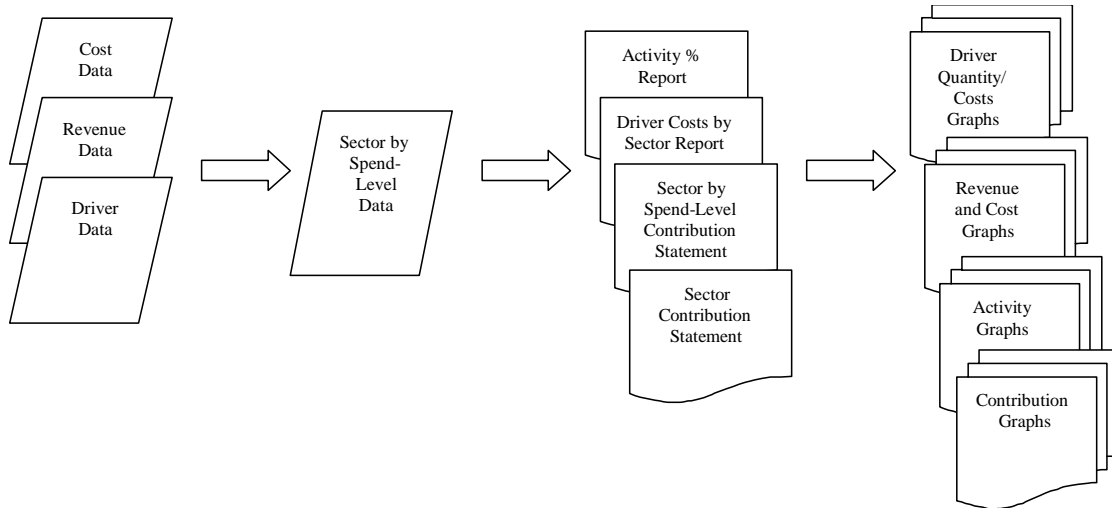


Figure 6

Contributions per account by spend level within each population density sector

