# The Construction of a Segmental Customer Profitability Analysis

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## Abstract

*This paper presents the construction of a geographically segmented Customer Profitability Analysis (CPA). The CPA was developed as a unique solution to a managerial problem: are there differences in the profitability of customers living in different geographic segments? The construct presented here applies the principles of activity based costing and an innovative segmentation model. The results were derived from a case study applying the constructive research approach in an Australian Telecommunications company.*

## Keywords

**Customer Profitability Analysis**
**Constructive Theory**
**Case Study**
**Telco Profitability Analysis**

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## Introduction

Over the past decade there has been increasing importance placed on customer profitability analysis (CPA) in practice (Foster and Young, 1997). This is due to a growing awareness that differences in revenues and costs exist amongst customers and customer segments. This importance appears not to have been reflected in the management accounting literature with relatively few published accounting research papers concerned with CPA (Guilding and McManus, 2002). This gap between management accounting research and management accounting in practice is also highlighted by a comparison of the findings of Foster and Young (1997: 69) who found that "customer profitability/satisfaction" was the "single most important current management priority" for American and Australian managers, and the findings of Shields (1997), who failed to find a single research study concerned with customer profitability from a review of the management accounting literature from 1990 to 1996. This study also aims to add to the dearth of customer accounting research. Guilding and McManus (2002) lament the lack of research in management accounting that focuses on customers and suggest a fruitful way forward in developing a theory of customer accounting is through the conduct of intensive case studies that enable a close examination of customer accounting in practice.

The segmental CPA construct was created for a business unit of a large telecommunications company in Australia. The company provides telecommunications services to over 7.5 million customers and maintains a strong customer focus delivering a wide range of products in an increasingly competitive Australian market. Management of the business unit requested anonymity and therefore the research site will be referred to as "Telco" throughout this case study to mask the company's identity. In addition, much of the financial and numerical data used and reported herein is masked to maintain confidentiality.

The case study applies a constructive research approach (CRA). The CRA stems from constructive theory and is defined as a

research procedure for constructing novel solutions – such as models, diagrammes and plans – that solve problems in running business organisations (Kasanen, Lukka and Siitonen, 1993). The segmental CPA construct described herein is a novel solution to an important management problem: do differences in profitability exist across the company's customer base? Therefore this study adds to the growing literature that has applied a constructive research methodological approach. Kasanen et al. (1993: 261) argue that:

*".. a successful constructive study – in which an innovative solution to a real-world problem is produced, its specific usability and theoretical connections are demonstrated and its potential for more general adequacy is examined – is apt to fulfil the most significant general characteristics of science (i.e., objectivity, criticalness, autonomy and progressiveness)."*

The cornerstones of the CRA are twofold. The creation of innovative managerial constructs in both practical and theoretical terms that solve managerial problems; and an intensive attempt to draw theoretical conclusions based on the empirical work. This study aims to contribute to the theory of customer accounting by providing a number of significant theoretical novelties. First, as no "off-the-shelf" solution was identified from the literature, a novel solution to a managerial problem is created that clearly meets constructive theory's weak-market test (Kasanen et al., 1993).[1] Secondly, an innovative geographic segmentation model is developed whose main characteristics are likely also to be useful to other firms. Thirdly, this is the first study to construct a geographic segmented CPA in a large telecommunications company and it is also the first study to document the difficulties involved in constructing a new CPA practice in an organisation. Finally, the study aims to contribute to the theory of customer

accounting by providing findings related to observing and analysing the construction process and actual use of the CPA system.

The remainder of the paper is structured as follows. First, a review of the relevant customer accounting literature is provided. The section following provides a discussion of constructive theory as the methodological approach adopted. The next section presents the construction of the segmental CPA. Finally a conclusion is presented that outlines the theoretical linkage of the construct, its contribution and limitations, areas of future potential and the most important implications of the study.

## Literature Review

As expected, for a relatively new area of academic research, very few published studies have been found in the customer accounting area. One technique that has been discussed, although to a limited extent, is CPA (Foster and Gupta, 1994; Foster and Young, 1997; Chenhall, 2003; Luft and Shields, 2003). This technique has mainly been considered in the context of teaching case studies and normative commentaries, although Guilding and McManus (2002) stand in relative isolation as the only study providing an empirical assessment of customer accounting. Additionally, Innes and Mitchell (1995) provide an example of studies that have found a relatively high level of CPA use while appraising activity based costing in the United Kingdom.

Some authors have advanced the use of customer accounting practices. Foster and Gupta (1994), in their examination of the accounting/marketing interface, suggest there has been a paradigm shift in marketing, by arguing there is a new marketing environment with a new focus of attracting and retaining profitable customers. This focus differs from the traditional marketing purpose that focused on products. Foster and Gupta (1994) argue that management accounting systems must be developed that better measure customer profitability than current product focused systems do. Ward (1992) supports this view and also advocates that decisions which are focused on customers require customer focused information and management

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[1] It should be noted that initially, available software packages were appraised but the company considered the software did not meet their reporting needs and therefore did not provide an appropriate solution.

accounting systems must supply the information required to make these decisions. The author further argues that in adopting a customer focused marketing strategy traditional product profitability analysis information is not appropriate.

CPA has been put forth as a possible means of addressing these issues. Bellis-Jones (1989) suggests that CPA is a powerful technique that can provide a solution to the customer profitability measurement problem and can be used as a means of supporting a customer focused strategy. Ward (1992: 167) states:

*".. the fundamental strategic importance of customer account profitability can be illustrated by the philosophy of one major marketing-led company, which argues that it does not have profitable products, only profitable customers."*

These CPA commentaries fail to provide any substantial guidance in relation to the construction of a CPA. Most commentaries have solely focused on advocating the use of CPA, especially as a means of understanding customer relationships (Bellis-Jones, 1989; Ward, 1992; Smith and Dikolli, 1995). In a recent commentary Guilding, Kennedy and McManus (2001) elaborate on CPA's potential in the hotel industry and outline a CPA approach referred to as 'supplementary purchasing CPA' by developing a hypothetical case study highlighting the importance of considering further revenue generating activities that occur after an initial hotel room sale, such as meals in hotel restaurants, bar sales, telephone calls, room service etc.

Cooper and Kaplan (1991a, 1991b, 1991c) provide a description of companies that have undertaken some form of CPA in three teaching cases: Kanthal, Winchell Lighting, Inc., and Manufacturers Hanover Corporation. Adoption of CPA in these three companies was motivated by the need to identify profitable customers to maintain and enhance, and to identify unprofitable customers so that actions could be undertaken to increase profits attributable to these customers or cease the trading relationship.

The Kanthal case demonstrates how activity based costing (ABC) can be applied, with individual customers as the unit of analysis. Kanthal, an electrical resistance heating elements manufacturer, conducted a CPA using ABC techniques to analyse selling and administrative expenses. It was found that 40% of the company's customers were profitable and generated 250% of the company's profits. The least profitable 10% of customers lost 120% of profits. Similar findings were also reported in the Manufacturers Hanover Corporation case, where a large number of customers were found to be well below satisfactory levels of profitability. Manufacturers Hanover Corporation, a commercial bank, also conducted CPA on an individual customer basis and included considerations of future profitability. The third Cooper and Kaplan (1991c) case demonstrates CPA conducted on a market segment basis. Winchell Lighting, Inc. a lighting manufacturer, also used an ABC approach to allocate costs to market segments on the basis of activities driving these costs, in order to gain an improved understanding of the profitability of customers in each segment.

A fourth management accounting teaching case 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) discuss CPA by undertaking an analysis of the Blue Ridge Manufacturing data. The CPA described by Foster, Gupta and Sjoblom (1996) is based on three market segments based on size of large, medium and small customers. The overall findings of the analysis were similar to those found in Cooper and Kaplan's (1991a, 1991b, 1991c) teaching cases; i.e. that the large customer segment (with 38.1% of total company revenues) contributes the majority of the company's operating income (67.3% of the total operating income). In comparison, the small customer segment (providing 39.2% of company revenues) has a marginal negative contribution towards operating income.

These four teaching cases do not provide a discussion of how to construct a CPA, identify problems and/or issues that may arise during the construction process, identify improvements that could be made or provide any real theoretical contributions to the theory of customer accounting. These cases do, on the other hand, provide rich descriptions of CPA and their work represents the most extensive 'real world' consideration of the impact of customer accounting.

Guilding and McManus (2002) consider the incidence, perceived merit and antecedents of customer accounting in a sample of Australian publicly listed companies. Three main findings were distilled from the study. Firstly, mean scores for three of the five customer accounting practices appraised in the study (customer profitability analysis, customer segment profitability analysis, lifetime customer profitability analysis, valuation of customers or customer groups as assets and customer accounting) were above the mid-point of the "used not at all – used to a large extent" measurement scale. It was concluded that customer accounting usage was greater than what might have been reasonably anticipated. In addition, mean scores of the perceived merit of all five customer accounting practices appraised were above the mid-point of the measurement scale.

This review clearly highlights a gap in the literature. This case study aims to fill this gap by providing a theoretical examination of CPA in practice, an analysis of the construction process, and articulate issues or problems accounted in providing an innovative CPA solution to a real world managerial problem. In doing so, this study aims to provide a further step in developing the theory of customer accounting by adopting a constructive research approach.

## Methodology

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: 82) who suggest that case study research is 'gaining in prominence as researchers attempt to link academic research with important issues in practice'. Linking theory and practice is most relevant to customer accounting as it is new area of management accounting research interest.

Constructive theory provides a valuable approach to bring together theory and practice in management accounting case studies (Kasanen et al., 1993; Labro and Tuomela, 2003). The CRA has been defined as a research approach for constructing novel solutions that solve managerial problems in running business organisations (Kasanen et al., 1993).

Kasanen et al. (1993) identify three main concepts of constructive theory: (1) *constructions* are produced to solve explicit problems and differ profoundly from anything which existed before, tend to create new reality, and their usability can be demonstrated through implementation of the solution; (2) *managerial constructions* solve problems that emerge in running business organisations; and, (3) the *constructive approach* is a research procedure for producing constructions. For example, in management accounting a new performance evaluation system (Tuomela, 2000), a new method optimising the procurement of a service (Degraeve et al., 2000) or the development of a collaborative approach for managing project cost of poor quality (Malmi, Järvinen and Lillrank, 2004) are examples of managerial constructions. The essential ingredient of constructive theory is to tie the problem and its solution with accumulated theoretical knowledge while demonstrating the novelty and the actual working of the solution.

The constructive approach can be characterised by dividing the research process into seven phases (Kasanen et al., 1993; Lukka, 2000):

1.  Find a practically relevant problem which also has research potential;

2. Examine the potential for long-term research cooperation with the target organisation;
3. Obtain a general and comprehensive understanding of the topic;
4. Innovate and construct a theoretically grounded solution idea;
5. Implement the solution and test whether it works in practice;
6. Examine the scope of the solutions applicability; and,
7. Show the theoretical connections and the research contribution of the solution.

In applying constructive theory to this case study, each of these seven phases will be examined in the process of describing and analysing the construction of the CPA at Telco.

## Application of the Constructive Research Approach

Initial contact with Telco occurred during an earlier exploratory interview conducted with the accounting manager to gain a better understanding of customer accounting in practice. During these discussions, the accounting manager highlighted the problem the company was facing in understanding profitability amongst their customers. The author was asked to develop a solution that would answer the question: do customers in different geographic areas consume the company's resources to differing degrees, thereby affecting customer profitability. This provided a significant research opportunity that required long-term research cooperation with Telco. In addition, it also led to a comprehensive understanding of customer accounting in practice.

A segmental CPA construct was proposed as a potential solution. The segmental CPA constructed can be generally defined as the calculation of the profit earned from a market segment or customer group; the profit calculation is based on costs and sales that can be traced to particular customer segments (Guilding and McManus, 2002). A review of all relevant literature was undertaken. While a number of "off-the-shelf" software solutions were identified, it was decided to construct a novel CPA construct as Telco was not satisfied that the available software packages would meet their needs. In addition, as no relevant segmentation model was available, an innovative geographic segmentation model was also created. The solution was subsequently implemented and tested. The following sections provide a discussion of the creation of the unique segmentation model and the innovative segmental CPA construct, an analysis of the application of the construct, followed by a discussion of its practical relevance, contribution and limitations.

## The Construct: Segmental Customer Profitability Analysis

The construction process commenced with an initial in-depth assessment of Telco, the financial systems, customer base, revenue and cost analysis etc. Next, the segmentation model was designed. The final step involved the creation of the CPA construct.

### Initial Assessment

The initial assessment involved gaining an understanding of Telco and their operations. The boundaries of the CPA were identified which included the time period of analysis, financial data available, operational activities and customer segmentation splits. Data triangulation was achieved with data gathered from meetings held with relevant members of Telco, copies of previous financial statements, in-house confidential reports and access given to the company's intranet and email system. It was decided, due to the amount of data involved, the CPA would be constructed based on the analysis of six months of financial information and only customers who had received a bill within this period would be analysed. It was during this initial phase that it was identified that each main area of activity within Telco had separate information systems that were not integrated. In addition, a number of these information systems were in the process of being upgraded or changed. Data collection and data reliability were flagged as areas of concern due to potential limitations that may be placed on the implementation of the construct and its applicability.

Analysis of costs identified over 4,000 items within the financial accounting system. Due to the resources involved in analysing this number of items, an aggregated level of

analysis was adopted. The cost items were summarised into three main cost headings with up to ten lower level cost groupings within each.

## Segmentation Model Construction

After the initial assessment of the research site and company systems, the next step involved selecting and developing a geographic segmentation model. One of the objectives of the method of segmentation was to provide an analysis of customers in a manner appropriate for supporting management decision making. It also had to be done in a manner that allowed for reliable identification of revenues and costs with geographic segments. It was desirable for the geographic segmentation model to allow customer revenues and costs to be directly traced to each segment thereby reducing the need for the use of sampling techniques in gathering data in relation to customer costs and drivers of those costs.

The segmentation strategy adopted was the exchange method. Each customer telephone number was traced to a telephone exchange based on telephone number ranges, each telephone exchange was allocated to locations based on the Australian Bureau of Statistics (ABS) classification of urban centres and localities. The ABS's census data was then used to allocate all of the urban centres to one of the five geographic segments of "metropolitan", "major urban", "minor urban", "major rural" and "minor rural" based upon population census data. The segment exchanges were then massaged in line with Telco's service delivery areas and exchange regions. Finally, as some cost items were extracted at the depot level, the segment exchanges were again reworked in line with the company's depots. Telco's customer base was then merged via a mainframe computer with the geographic segmentation model constructed using customer telephone numbers. Each customer was then identified with one of the five geographic segments. The final segmentation model statistics are presented in Table One.

## Table One: Geographic Segmentation Model

| Geographic Segment | Segment Population Criteria | Number of Locations | Average Population | % 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% |

## Segmental CPA Construction

The first step in the development of the CPA construct involved analysing the revenues and costs. Analysis of customer revenues was straightforward as actual customer revenues from Telco's billing database were identified and directly traced to customers in the five geographic segments via customer telephone numbers. An analysis of customer costs was

much more involved. The cost analysis was broken down into three cost areas. These three cost areas were based on the main activities performed by Telco. The first grouping of costs 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 that made up 24.1% of the total costs. The second cost analysis

priority was the *'Field Service and Customer Access Network (CAN) Infrastructure Costs'* that made up 25.2% of total 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'* (that made up 37.9% of total 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 geographic segmentation, customers in each segment were further split into 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. Actual revenues

were analysed for each customer. If a customer had "spent" (i.e., had total revenue) less than $400 they were allocated to the low-spend segment within their geographic segment; if a customer had total revenue of between $400 and $800 they were allocated to the medium spend-level segment and if more than $800 in total revenue they were allocated to the high spend-level segment.

Table Two and Table Three 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 segments, 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 Two and Table Three, only the directory assistance costs and field repair costs are described in the following sections to give context to the technical detail of the CPA construct.

**Table Two: Summary of Data Gathering Methodology and Issues Arising for the 'Sales, Marketing, Support and Other Costs'**

| Cost Item | Cost Driver | % of Total Costs | Cost Data Collected | Data Reliability | Data Gathering Recommendations |
|---|---|---|---|---|---|
| (1) Call Centre Activities | Call Centre Calls | 4.8 | One month sample | Low | Call Centre calls by exchange |
| (2) Bill Processing | Bill Sheets | 3.8 | Actual | High | Data capture adequate |
| (3) Bill Enveloping and Mailing | Bills | 0.5 | Actual | High | Data capture adequate |
| (4) Bill Receipting | Bills | 1.4 | Actual | High | Data by bill payment type by cost |
| (5) NTC Activities | NTC calls | 0.9 | Actual | High | Data capture adequate |
| (6) Agency Sales | Agency Commissions | 0.3 | Actual | High | Data capture adequate |
| (7) Order Processing | Orders Processed | 2.8 | Actual | High | Data capture adequate |
| (8) Complaints | Complaints | 0.4 | Actual | High | Data capture adequate |
| (9) Credit Management | Delinquent Accounts | 0.8 | Point-in-time current | Medium | Data gathered for reporting period |
| (10) Bad Debts | Bad Debts | 3.3 | Point-in-time | Medium | Match to later months' write off data |
| (11) Directory Assistance | Directory Assistance calls | 2.4 | 35 day sample | Medium | 6 months data gathered for reporting period |
| (12) Operator Assisted Calls | Operator Assisted Calls | 1.9 | 1 week sample | Medium | 6 months data gathered for reporting period |
| (13) Customer Marketing | Splits by accounts | 0.7 | Actual | High | Data capture adequate |

**Table Three: Summary of Data Gathering Methodology and Issues Arising for the 'Field Service and Customer Access Network Costs'**

| Cost Item | Cost Driver | % of Total Costs | Cost Data Collected | Data Reliability | Data Gathering Recommendations |
|---|---|---|---|---|---|
| (1) New Activations | New Activations | 7.0 | Actual | High | Data capture adequate |
| (2) In-Place Activations | In-Place Activations | 2.1 | Actual | High | Data capture adequate |
| (3) Adds, Moves and Changes | Service Activation Revenue | 0.5 | Actual | High | Data gathered for Adds, Moves and Changes by exchange |
| (4) Customer Equipment Work | Customer Equipment Faults | 0.4 | Actual | High | Data capture adequate |
| (5) Fault Reporting | Faults Reported | 3.5 | Actual | High | Data capture adequate |
| (6) Fault Testing | Faults Tested | 1.0 | Actual | High | Data capture adequate |
| (7) Field Repairs | Customer Access Network field Visits | 3.1 | Actual | High | Data capture adequate |
| (8) Service Scheduling/ Dispatch | Service Orders | 2.0 | Combination of activation and equipment faults; Actual | Medium | Service orders by exchange |
| (9) CAN – Depreciation | CAN allocation model | 4.2 | Current | Medium | Further work required to obtain more reliable allocation basis |
| (10) CAN – Planning and Design | CAN allocation model | 0.7 | Current | Medium | Further work required to obtain more reliable allocation basis |
| (11) CAN – Upgrade and Replacement | CAN allocation model | 0.5 | Current | Medium | Further work required to obtain more reliable allocation basis |

The directory assistance costs were allocated across the segments and spend-level sub-segments by directory assistance calls. As actual data was unavailable, a 35-day sample was obtained for all directory assistance calls by exchange. Significantly more directory assistance calls were received per customer in the metropolitan segment and therefore greater costs were also incurred per customer in this segment. Figure One presents a graph of the average directory assistance costs per customer and the average directory assistance calls per customer for each segment and spend-level.

**Figure One: Directory Assistance Cost Driver Volumes and Cost per Customer by Spend Level within Each Geographic Segment.**
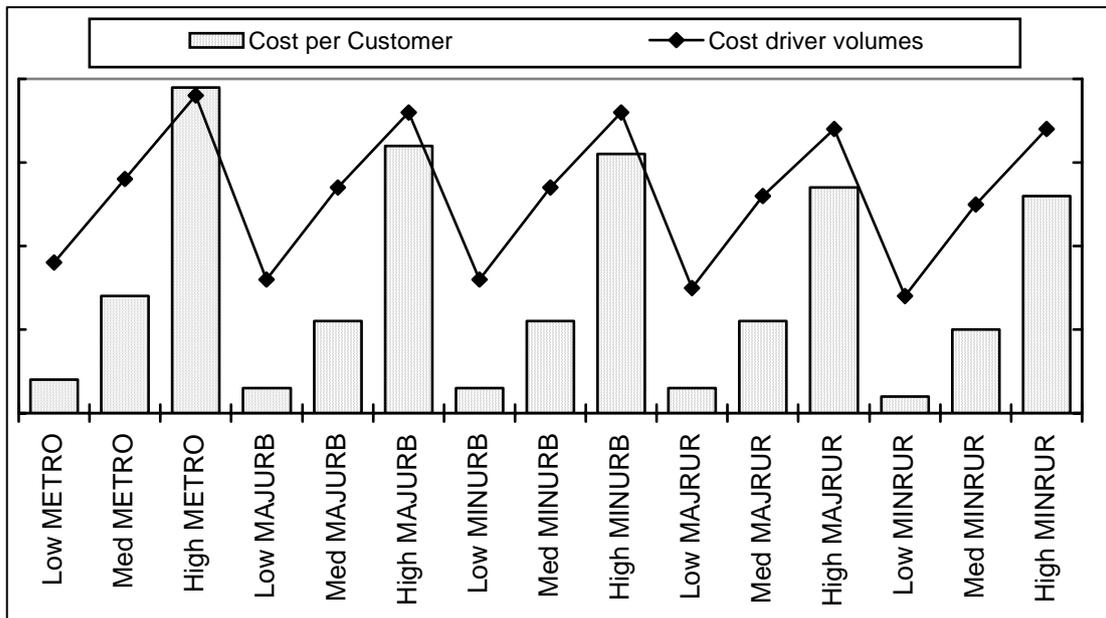


Depot level costs for field repairs were obtained for the six months. These costs were then allocated across the segments and spend-level sub-segments by the number of CAN field visits. Field visits was chosen as the cost driver of these costs as in nearly all cases when Telco's service personnel go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

Figure 2 presents the field repair cost per customer across the segments and spend-levels, together with the field visit driver volumes per customer. The field repair costs per customer were significantly different across the geographic segments. A field repair cost 5.8 times more in the Minor Rural segment compared to the Metropolitan segment. Furthermore, cost driver volumes per field visit also increased across the segments with more field visits occurring in

the Minor Rural segment than the other four segments.

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 Telco. 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 the geographic segments 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.

**Figure Two: Field Repair Cost Driver Volumes and Cost Per Customer By Spend Level Within Each Geographic Segment.**
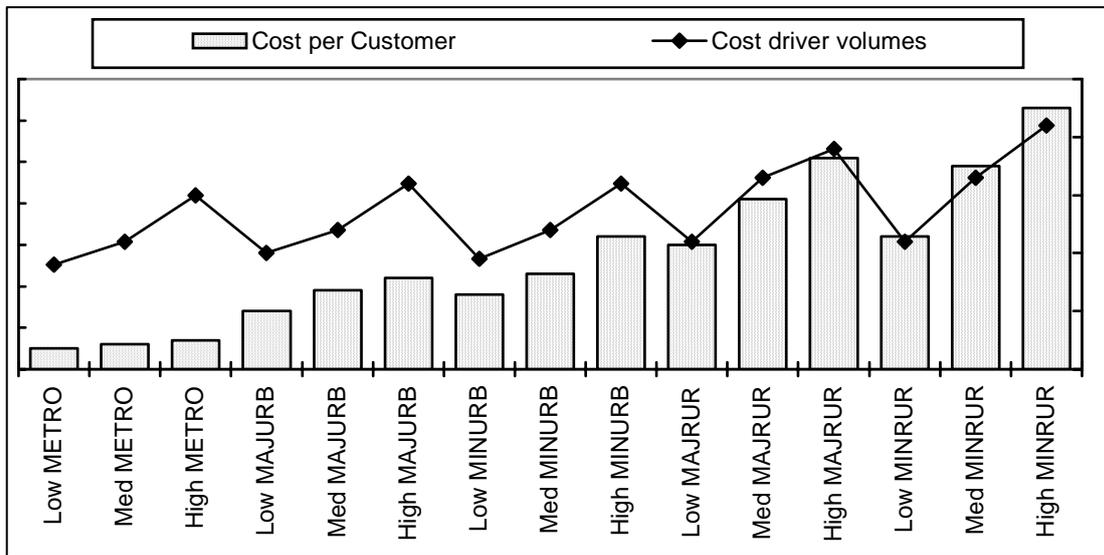


Figure Three provides an example of the segmental CPA system cost and driver flow. Most cost items were mapped to segments differently depending upon the level of cost extraction and the method of cost driver allocation. The method of allocation of the customer equipment work costs is presented in Figure Three.

Interestingly the management of Telco urged the inclusion of corporate overheads (which made up 12.8% of the total costs) in the analysis. Their argument was that they were interested in the 'bottom-line' profitability of their customers and therefore wanted corporate overheads assigned to the geographic segments and spend-level groupings. In addition, management wanted the construct to receive widespread acceptance throughout the company and as

most other financial reports included corporate overheads it was suggested for consistency the segmental CPA also included these costs. The segmental CPA was constructed showing profitability both before and after corporate overheads, which were allocated based on the number of customer accounts per segment.

The next step in the construction process involved testing and verifying the results produced. This step was concerned with ensuring that the results of the segmental CPA construct were valid and that there were no "bugs" in the system. The construct was modelled using the Microsoft Excel programme. A diagrammatic depiction of the segmental CPA system is illustrated in Figure Four.

**Figure Three: Customer Equipment Work Cost Map*.**
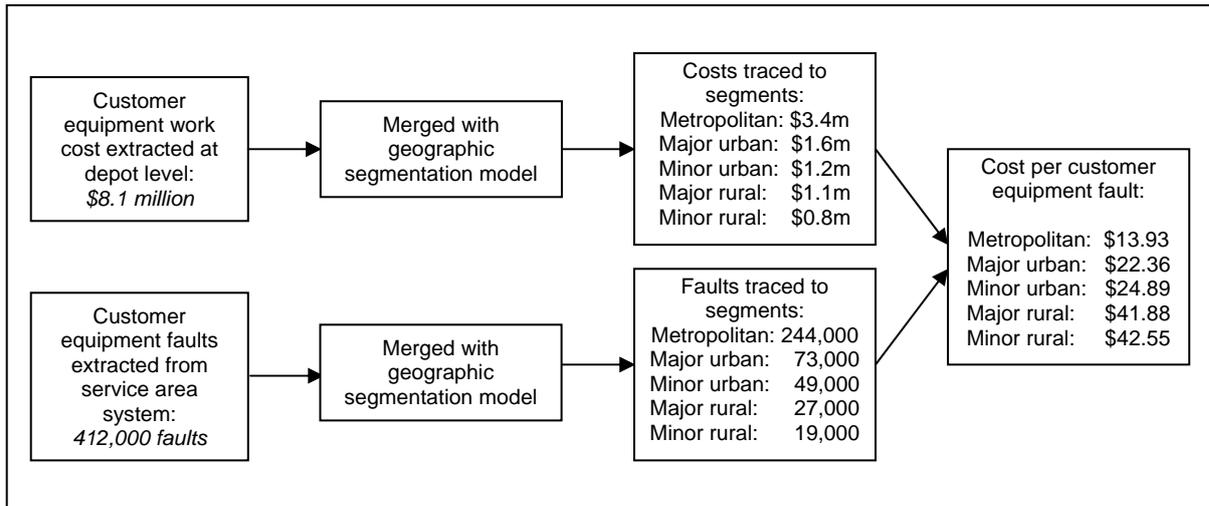


* Note: Example data used that reflects relativity of actual data.
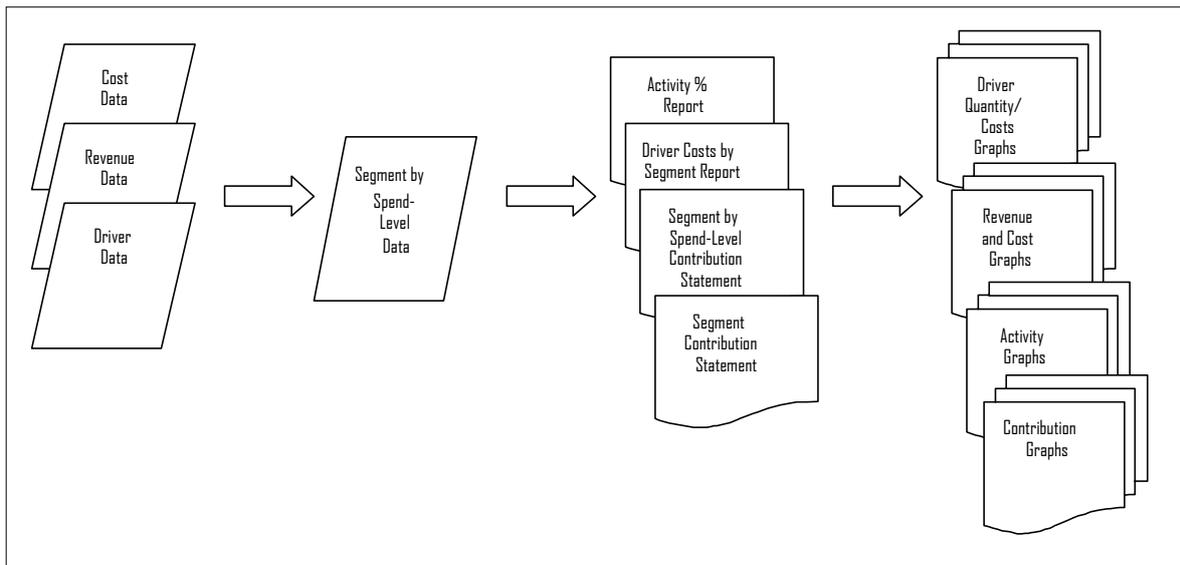
**Figure Four: Segmental CPA Construct.**



Figure Four illustrates the system in reverse order i.e., the cost data was entered into the final worksheet. The revenue and cost data was sourced directly from Telco's financial statements. The driver data was obtained from a myriad of sources. The segment 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 segments 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.

## Discussion

The final stage of the construction process involved implementing the solution and providing an answer to the question: do differences in customer profitability exist across different geographic segments? The

answer is yes, there are differences in customer profitability. Overall the construct showed that all geographic segments had a positive net contribution, although customer profitability declined across the segments with Metropolitan customers having the largest profitability and Minor Rural customers contributing the smallest profit. Also, from a spend-level perspective, all low spend customers (less than $400 revenue) were found to have a negative net contribution that increased across the geographic segments (see Figure Five). 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 segment, Minor Rural customers' average revenue for the six month period was slightly higher than that provided by the other segments.

**Figure Five: Contributions per Account by Spend Level within Each Geographic Segment.**
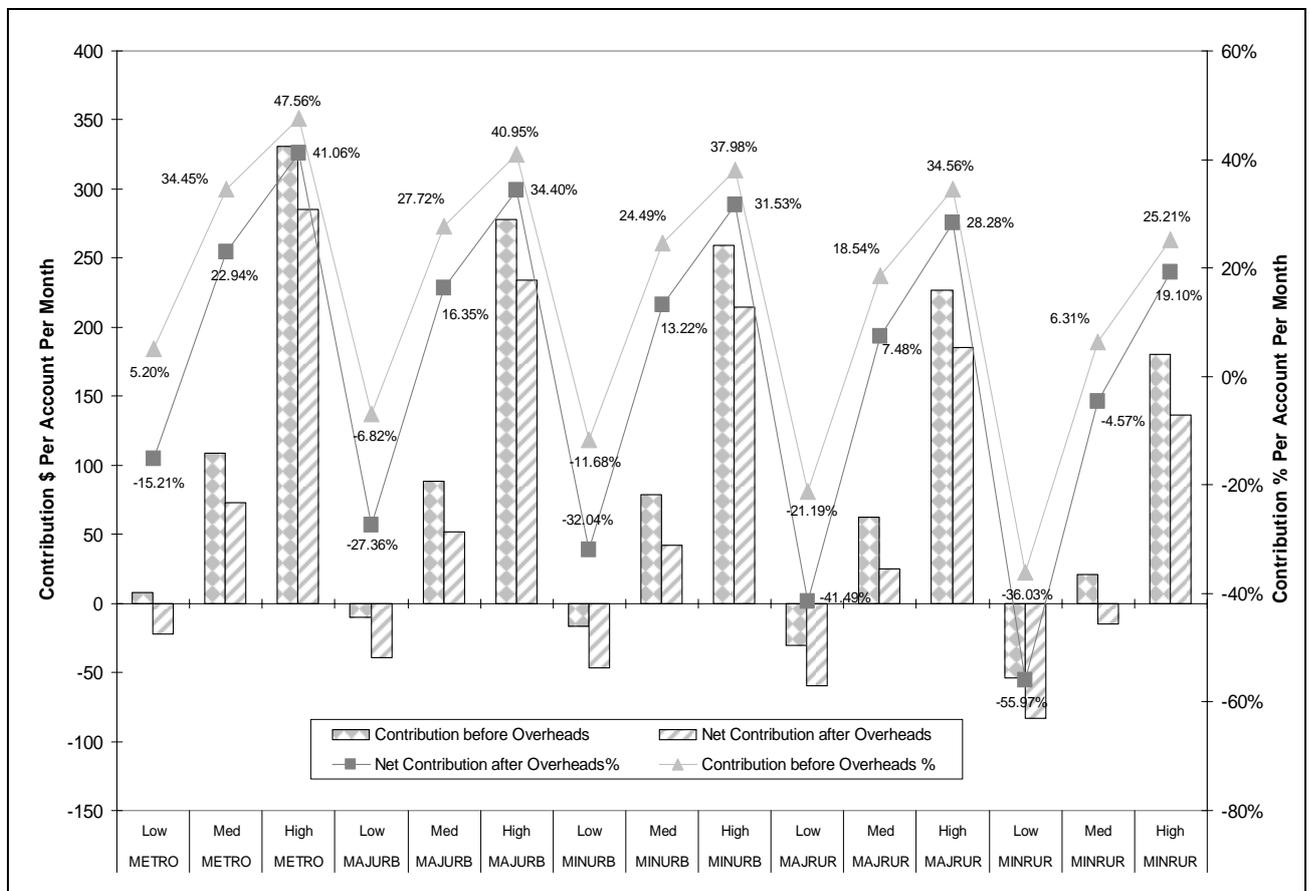


Specifically in relation to the three cost categories, the *'Sales, Marketing, Support and Other Costs'* per customer were found to be fairly evenly spread across the segments. From a spend-level perspective, it was apparent that increasing costs per customer segment were incurred as the spend-level increased. Minimal variation was shown across the geographic segments for *'Network Infrastructure Costs'*. It was found that the

main driver of cost differentials and therefore profitability variation across the five geographic segments were the *'Field Service and Customer Access Network (CAN) Infrastructure Costs'*. For all cost items in this category the greatest cost per customer was found to arise for the Minor Rural segment. The lowest cost per customer was incurred in the Metropolitan segment, with costs per customer steadily increasing across the five

segments. The increasing costs across the five segments were caused mainly by a significant difference in driver unit costs per new activation, in-place activation, equipment fault and field service visit.

The solution provided by the construct gave management at Telco insight into the profitability of their customer base that they had no knowledge of before. Telco used this information to undertake new marketing strategies aimed at increasing revenues of the profitably challenged geographic customer segments. New products were developed specifically for the low spend segment customers to lift profits. These strategies were aimed at changing customers purchasing behaviour in an effort to increase revenues. While previous commentaries have suggested that a CPA can identify unprofitable customers to "drop", this was not an option for Telco due to government legislation. So understanding their customers' profitability was seen as all the more important as they could not provide services to a customer segment but could instigate strategies to alter customers' consumption patterns.

The practical relevance of the solution is primarily attested to by the fact that Telco continues to conduct a geographic segmental CPA every six months. Many of the limitations of the initial construct, outlined below, have been overcome and data gathering recommendations have been adopted. This has resulted in a robust construct that has clearly received market-based validation and has passed Kasanen et al.'s (1993) weak market test. Kasanen et al. outline three market-based validation tests that examine the practical relevance and the scope of the solutions applicability. If a construction is applied by a manager in their decision-making process, it has met the weak market test. The semi-strong market test is passed when a construction has become widely adopted by companies. When it can be shown that business units applying the construct systematically produced better financial results than those not using it, the solution is said to meet the strong market test. At this point in time in the construct's wider evolution it has clearly passed the weak

market test but has not quite met the other two stronger market tests.

To be commercially and therefore practically viable the benefits of a managerial construction must outweigh the costs involved in its development. Most times the point of acceptance of a construct involves a compromise between accuracy and cost. It is likely that the cost of constructing a 100% accurate solution to a managerial problem, such as on the scale of this case study, would far outweigh the benefits derived. Therefore, due to the novelty of the solution, the size of the construction and the constraints involved in the construction process, there were some limitations identified with the initial CPA construct. A number of suggestions were made to Telco in regard to further development. The limitations related primarily to improving the data gathering techniques involved in obtaining cost drivers to allocate some of the cost items. The main limitations and improvements in data gathering techniques identified are outlined in Table Two and Three. 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 suggested that data for all calls to call centres across Australia by exchange for six months are gathered. The data reliability for the CAN costs (depreciation, planning and design, and upgrade and replacement) driver, presented in Table Three, was considered to have only a medium reliability. 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 development of the construct the CAN cost allocation model was applied with some reservations. It was suggested 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 segments and ultimately the

validity and robustness of the overall construct.

Suggestions were also made for Telco's future reporting of customer profitability. It was suggested that the products and services provided by the company's other business units be incorporated into all CPA reporting. As the construct was only developed for one business unit of Telco, the picture of customer profitability presented represents only a partial perspective, as many customers may be providing additional contribution through their usage of Telco's other products and services. Furthermore, 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.

The main contribution of this study is a geographic segmental CPA. An innovative construct was developed. Combining a unique segmentation method, activity based costing principles and concepts drawn from the CPA literature, the customer accounting literature has been further developed. Constructing a practical solution to a managerial problem by applying a constructive research approach has enabled a marriage of theory development and problem solving in practice that has not only lead to a robust construct, but one that adds to the theory of customer accounting. Additionally, as very few previous studies have adopted a constructive research approach, this study can also be seen as a contribution to the literature.

## Conclusion

This paper presents the construction of a geographically segmented CPA using a constructive theory approach at Telco, an Australian telecommunications company. Teleco provides telecommunication services to over 7.5 million customers Australia wide. The novel construct was developed to solve an important managerial problem: do differences in profitability exist across the company's customer base? The result of the CPA identified that differences in profitability do exist between customers that live in different geographic areas of the Australia. Overall, customers in metropolitan and urban areas provide greater profits than customers

residing in rural areas. In addition to the construction of the unique CPA, a novel segmentation method was also developed. It is assumed that both constructions are applicable to other companies. The process of the CPA could quite readily, with some modifications, be transported to other large companies interested in gaining a better understanding of their customers' profitability. In addition, the segmentation model based on customer telephone numbers could be applied in other types of Australian organisations – both on a national, state or local level.

In summary, the construct helped managers at Telco solve their problem and contributed to theory. The use of constructive theory to research CPA has both helped to close the gap between theory and practice. Potential research opportunities exist to export the CPA to other companies. Additionally, the construct is a 'retrospective' analysis (Storbacka, 1997; Jacobs, Johnston & 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: 355). While this type of analysis is often a valuable first step in an ongoing customer profitability programme, it is with 'prospective' analyses that even greater managerial knowledge can accrue (Storbacka, 1997). One of the suggestions made to Telco was the construction of a customer valuation analysis as a means of providing a greater understanding of customer profitability over the lifetime of the relationship. One manager at Telco noted:

" *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 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.*"

This suggests that further 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.

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