

An Investigation into the Application of Customer
Profitability Analysis as a Strategic Decision-Making
Tool in a Hospitality Environment

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To

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Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Masters of Business Studies is entirely my own work and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my own work.

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Abstract

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The primary objective of this study was to investigate the Applicability of Customer Profitability Analysis as a strategic decision-making technique in a hospitality environment. The study commenced with a review of literature in the fields of Yield Management, Customer Profitability Analysis (CPA) and Activity-Based Costing (ABC), with ABC being identified as an appropriate method of costing to use in CPA. Issues arising from the implementation of an Activity-Based CPA including the purpose of the system, the selection of software and the identification of activities and drivers are considered both in the context of a literature review and are later considered in the context of the primary research undertaken by the author. The primary research involved the development of an Activity-Based CPA and its implementation in a hotel environment. The test site chosen for the implementation of the system was a three star, medium-sized hotel property located in the centre of Dublin city. The time taken to conduct the study at the site was thirteen months. Findings indicate that the concept of CPA, using ABC, is applicable in the hotel environment. Findings also suggest that is technically feasible to apply an Activity-Based CPA in a hotel organisation with results of the analysis at the site providing valuable information to management for decision-making. One of the significant findings of the analysis was that 38% of revenue generated at the site is contributing to 137% of total profits. The study has resulted in the availability of cost and revenue data by customer group, data that was previously inaccessible by management at the site. Management anticipate maintaining the system at the site in order to use the customer profitability information generated by the system in long-term customer-related decisions.

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List of Abbreviations

ABC	----- Activity-Based Costing
CIMA	----- Chartered Institute of Management Accountants
CPA	----- Customer Profitability Analysis
IBEC	----- Irish Business and Employers Confederation
IHCI	----- Irish Hotel and Catering Institute
IHF	----- Irish Hotels Federation

INTRODUCTION

Yield Management has been heralded as the business-planning tool for hoteliers for the 1990s. However, its focus on revenue maximisation with often limited concern for guest ancillary spend and the cost implications of the customer mix, may lead to a position where the long-term profitability of the organisation is compromised.

Product costing and customer profitability models have been introduced in the manufacturing sector to aid the strategic decision-making process. Despite the well-documented success of these techniques in addressing the profit objectives of manufacturing concerns, there is little literary evidence to suggest that they have been applied in service industries in general and in the hospitality industry in particular.

The primary objective of this study was to investigate the applicability of customer profitability analysis as a strategic decision-making technique in a hospitality environment. In order to fully address the research topic, the following objectives were established:

- 1) to review yield management, in the context of customer mix decisions in the hotel industry;
- 2) to investigate Customer Profitability Analysis (CPA) as a decision-making technique;
- 3) to investigate the potential use of Activity-Based Costing (ABC) in a CPA model;
- 4) to develop a CPA prototype, using readily available software tools;
- 5) to test the application of the CPA prototype in a hotel environment;
- 6) to investigate the potential role of CPA in decision-making in hotels.

The thesis consists of six chapters, the contents of which are outlined below.

Chapter One

This chapter consists of a review of the literature published in the areas of yield management, CPA and ABC. Yield management is discussed in terms of its definition, its origins and its subsequent adoption by the hotel and hospitality sector. The implications of yield management practices in terms of the profit impact of the customer mix are reviewed. The concept of CPA is introduced and the method by which it matches costs to customer groups is discussed. In addition, the issue of the application of ABC/CPA in a hotel environment is examined.

Chapter Two

Chapter two outlines the practicalities of implementing ABC, with reference to various issues addressed in the literature. The review examines the ABC process at two levels; that of development of the system and that of implementation. The chapter introduces and describes various concepts such as activity and driver identification and activity and driver analysis. A number of examples of organisations from both the manufacturing and service sectors are given, citing their experiences of utilising ABC as a management tool. Chapter two closes with a review of the current status of ABC.

Chapter Three

Chapter three describes the methodologies employed by the author to design and implement an activity-based CPA system in a test hotel site. The chapter opens with a description of the hotel chosen as the test site and a brief explanation of why that site was selected. The chapter outlines the ten step development cycle constructed in order to design and implement ProEno, the name given to the activity-based CPA system. These steps include site assessment; activity, driver and revenue analysis; system design, construction and automation; data input; results output, and evaluation by management at the site.

Chapter Four

This chapter presents the results obtained from the design, implementation and evaluation of ProEno. The results are both qualitative and quantitative in nature and are presented in five sections; site assessment, activity and driver analysis, revenue analysis, output results and evaluation of results by management at the site.

Chapter Five

Chapter five examines the results obtained from the design and implementation of ProEno. The results are discussed under three main headings: (i) issues arising from implementation; (ii) interpretation of profitability by customer group and (iii) evaluation of ProEno by management at the site.

Chapter Six

Chapter six presents the conclusions and recommendations arising from the research undertaken and the design and implementation of ProEno.

1. A Review of Yield Management and Customer Profitability Analysis

1.1 Introduction

Achieving the full potential of each customer relationship should be the fundamental goal of every organisation. The logic is as simple as it is compelling - the profits derived from customer relationships are the lifeblood of the organisation (Grant and Schlesinger, 1995).

The increased importance attributed to the management of customer relationships within all types of organisation in recent years has been reflected by the proliferation in a range of techniques, such as total quality management and process re-engineering, which place an emphasis on the enhancement of customer satisfaction. The development of these techniques has been prompted by the growing awareness amongst management of the necessity to consider customer needs and wants in order to remain competitive in the marketplace (Smith, 1993). However, in doing so, has management overlooked the dual requirement that customers must also satisfy the strategic needs of the organisation? As global competition intensifies and customer expectations increase, management must endeavour to achieve an optimal mix of customers that will satisfy the overall corporate objective of profit maximisation. Determination of the optimal customer mix demands the provision of appropriate information in order to support and enhance customer-related decisions.

In the last decade, there have been considerable developments in the techniques available to assist decision-making in hotels including rooms engineering, cost-volume-profit analysis, market segment profit analysis and yield management (Downie, 1995). However, most publications have centred primarily upon yield management, as illustrated by the works of Kimes (1989), Orkin (1988, 1990), and Donaghy et al. (1995).

In this chapter, the concept of yield management and its role in the determination of an optimal customer mix in the context of the hotel industry is reviewed. The concept of

Customer Profitability Analysis in terms of its potential role in enhancing the yield management process in customer-related decision-making over a long-term horizon is examined. The use of Activity-Based Costing as an appropriate method of cost allocation in customer profitability analysis is also investigated.

1.2 Yield Management

1.2.1 Defining Yield Management

Many definitions of yield management exist (Jauncey et al., 1995). In its 1987 annual report, American Airlines broadly described the function of yield management as 'selling the right seats to the right customers at the right prices' (Smith et al., 1992, p8). While this statement may oversimplify yield management, it does capture the basic motivation behind the strategy.

Jones and Hamilton (1992, p91) propose the following definition of yield management,

Yield management comprises a range of systems and procedures to maximise sales of a product or service under more-or-less fixed supply conditions, where revenue-producing ability diminishes with time.

Kimes (1989) describes a 'good yield management system' as one which will help a firm to decide how much of each type of inventory to allocate to different types of demand. Lieberman (1993, p36) expands on this by stating that,

Yield management uses information about customer purchasing behaviour and product sales to develop pricing and inventory controls that produce greater revenues and deliver products that are better matched to the customers' needs. It is a melding of information-systems technology, probability, statistics, organisational theory, and business experience and knowledge.

Donaghy et al. (1995), in their review of yield management, recognise that while there is no precise definition of yield management, there is considerable agreement about its potential to enhance revenue generation.

1.2.2 The Origins of Yield Management: The Airline Industry

Airline deregulation began in the United States in 1978. However, it was not until the 1980s that marketing and pricing assumed their role as key determinants of financial success in the airline industry (James, 1987). In the first four years of deregulation several external factors influenced the expected marketing and pricing freedom of airline carriers. These included sharp fuel price increases, a major recession in the US economy, and an air-traffic controller strike. Fuel cost increases alone forced airline prices up 28% in 1980. This allowed relatively few options, if any, for marketing moves by the airlines.

The starting point for true pricing and marketing competition was 1983 (James, 1987). From 1983 to October 1986, some 45 scheduled carriers went bankrupt, merged or were acquired. During this time heated fare wars took place - American and Braniff in the Dallas/Fort Worth areas and United, Continental and Frontier in the Denver area are but two examples.

Despite such severe competition, price cutting and carrier casualties, the industry maintained profitability, setting a record operating profit in 1984 of \$2.4 billion, followed by \$1.4 billion in 1985 (James, 1987). These results were accomplished through the use of highly sophisticated pricing management and capacity control, a process known as yield management (Kraft et al., 1986).

Relihan (1989, p41) discusses yield management in the airlines, stating that,

The airlines embraced Yield Management after suffering major losses in the early 1980s as a result of uncontrolled discounting.....Now they offer many fares and juggle their availability to maximise revenue.

James (1987) describes yield management in the airlines as a process which involves a large number of marketing and pricing people who continually follow the changing prices of competitors, the stage of the business cycle, seasonality factors, economic and demographic characteristics, and other relevant market information. They are instantly ready to change prices, up or down, as the market dictates, and tie fares to the number of seats made available for this purpose.

American Airlines were to the forefront in the adoption of yield management practices by the airline industry. Indeed, research by this carrier into the revenue management of reservations inventory began in the early 1960s (Smith et al., 1992). At American Airlines, a core of highly skilled mathematical economists known as ‘econometricians’ is maintained for operating closely with marketing and pricing departments in order to provide a quantitative basis for decisions for which the airline has become well known and a leader in the industry.

Not all airline carriers followed American Airlines’ lead. People Express, for example, finally moved towards yield management in 1986 only to discover that it was too late. They had not adopted the market-led practices of their competitors and subsequently collapsed (Relihan, 1989).

1.2.3 Yield Management and the Hotel Industry

The management of yield in the hotel industry is derived from the concept of yield management in the airline industry. The work of Kimes (1989) demonstrates that yield management practices are applicable in a hotel environment as the characteristics which she deems necessary for the proper adoption of yield management are present. These include:

- A relatively fixed capacity
- Demand which can be separated into distinct market segments
- Perishable inventory
- A product which is sold well in advance of consumption
- Fluctuating demand
- Low marginal sales costs and high marginal production costs

In the hotel industry, yield management may be described as,

using information, historical and current, in combination with policy supports, procedural supports, and statistical models, to enhance a hotel's ability to carry out a number of common business practices and thereby increase both its revenues and its customer service capabilities.

Lieberman (1993, p36)

Donaghy et al. (1995) describe yield management in the context of hotels as a revenue maximisation technique which aims to increase net yield through the predicted allocation of available bedroom capacity to pre-determined market segments at an optimum price.

According to Relihan (1989), the yield management process begins with an understanding of customers' purchase behaviour and a comparison of current demand with forecasts of future occupancy. He states that by identifying sales opportunities in this way, yield management strikes a balance between supply and demand through constant small adjustments in the economic variable that the hotel manager can most effectively control - price.

As a management tool, yield management is not entirely an innovation (Donaghy et al., 1995). For many years hoteliers have been manipulating and adjusting various market segments' demand patterns and levels by raising and lowering room rates. Their argument is that they have been practising yield management for years. It is contended, however, that many hoteliers, whether consciously or unconsciously using yield management, are not using it to its full potential (Whelan, 1994). Relihan (1989) states that what differentiates contemporary yield management from traditional pricing practices is the frequency and scope of the decision-making processes involved. Dillon (1991) notes that while many hotels already control the space available to a degree, contemporary yield management brings this process to a much more sophisticated level, by analysing the year, not only season by season, but by individual day.

The two key factors in determining room revenue are occupancy and average room rate. One can increase room prices to the extent that they are rejected and occupancy lost.

Conversely, one can pursue occupancy at the expense of rates until a point is reached where operational costs cannot be covered (Dillon, 1991). The philosophy of yield management is to simultaneously optimise both these variables in the yield statistic, identified by Orkin (1988) as a measure of yield efficiency:

$$\text{Yield efficiency} = \text{Revenue Realised} / \text{Revenue Potential}$$

Orkin (1988, p52) has defined Realised Revenue as 'actual sales receipts' and Potential Revenue as the 'income that could be secured if 100% of available rooms are sold at full rack rates' i.e. the maximum room rates charged.

1.3 Does Yield Management Address the Profit Impact of the Customer Mix?

Donaghy et al. (1995) state that the yield statistic proposed by Orkin may be restrictive and unrealistic. They identify a shortcoming of Orkin's statistic in terms of its focus on revenue generated from accommodation in isolation from costs and the other revenue generating departments of the hotel and suggest that if yield management is to effectively enhance yield, these factors must be taken into consideration. This is consistent with Brotherton and Mooney (1992) who state that, in order to maximise overall profits both the cost implications of the customer mix and the guest ancillary spend must be taken into account.

1.3.1 Cost Implications of the Customer Mix

A market is not a homogeneous group of customers, each requiring an identical product. Every market consists of buyers with differing needs and buying behaviour. A firm may recognise these differences, and group customers into segments, each warranting different marketing effort. Indeed, the incidence of firms segmenting markets and tailoring marketing efforts to meet the needs of specific customers has increased during the past decade (Coad, 1990).

In the pursuit of both volume and margin, firms have altered the trading relationship with key customer groups by, for example, offering discounts and special allowances; varying the amount of sales and promotional effort required to service a customer; and, varying the level of service given to customers. The net effect of such actions is a greater difference in cost elements between customers and, ultimately, variations in profitability.

Brotherton and Mooney (1992, p31) report that,

Many of the current yield management systems in use tend to focus management attention on revenue maximisation thereby ignoring a critical feature of the concept of yield within the context of the profitability of the business as a whole. This being a recognition that the profit, as opposed to the revenue, yield from a given pattern of sales is dependent not only on revenue maximisation through flexible and responsive pricing strategy but on the differential supply side costs associated with a given pattern of sales.

1.3.2 Guest Ancillary Spend

An underlying assumption of yield management is that the inventory item being allocated is independent of other portions of the service business (Kimes, 1989). For example, the sale of airline seats does not affect other portions of the airline business such as cargo and post transportation. However, this assumption may be violated in other industries. In the hotel industry, for example, guest spend often goes beyond the purchase of accommodation to the purchase of other services within the hotel, primarily expenditure on food and beverage provision. The allocation of reservations merely on the basis of room rate may lead to less than optimal solutions when considering the overall revenue of the hotel (Kimes, 1989).

As Brotherton and Mooney (1992, p28) state,

It must be recognised that different types of guests possess different expenditure propensities in relation to the other elements of the product mix. If overall profit yield is to be maximised other categories of expenditure on food and beverage must be taken into account when trying to assess the total yield from a given sale of accommodation.

1.4 Customer Profitability Analysis

1.4.1 The Concept

Customer Profitability Analysis (CPA) involves the identification of revenues, costs and profit by individual customer or customer group. The availability of this quantitative information is essential for the successful management of the customer mix. While there is widespread acceptance of this fact among managers, it is paradoxical that, in most companies, there is very little information available about the profitability of customers (Coad, 1990). This is because management accounting systems are usually designed to analyse product profitability. They record, code, classify and report revenues and costs for each product or product group. This is important for the purposes of financial reporting and to assist management with decisions such as deleting a product range, adjusting selling prices and establishing criteria for judging new products. However, for many businesses, this emphasis on product profitability has led to the neglect of customer profitability as a key indicator of performance.

Bellis-Jones (1989, p26) argues that many companies have resigned themselves to low, decreasing profitability on the grounds that the trading environment is 'becoming more difficult', the reality being that they squander otherwise profitable parts of their business by supplying service at below true cost.

Companies need to be able to quantify and present the implications of the trading relationship so that it can add real value to commercial decisions. By combining both revenue and cost data, CPA provides management with the profit information regarding their customer base which is essential if well-informed strategic decisions are to be made in the long-term. This analysis should enable managers to answer key questions which the yield management process fails to address (Figure 1).

- Does market sector X meet our profitability criteria? Has it ever? Can it ever? If so, how?
- Which account generates the greatest profit contribution and how best can we protect it?
- What are the maximum discount/service packages we can afford in the next round negotiations with our largest customers while still meeting our profit objectives?
- What type of account should we focus our new business effort on for maximum profitability?
- Do our large accounts really make money? Under what conditions are we prepared to walk away from that volume and what will we have to do as a consequence?
- Should we stay in this market?

Figure 1 - Questions Pertinent to the Profitability of Customer Groups
(Source: Bellis-Jones (1989, p26))

If these questions cannot be answered accurately, then the success of related decisions will be minimal.

1.4.2 CPA and Decision-Making

The customer profitability database can be analysed without limit, but will yield no benefits until the results are applied (Bellis-Jones and Develin, 1992). Within a hotel environment, the information derived from CPA can be applied to the decision-making process in several key areas, including the control of costs and strategy development.

(i) Cost Control

The starting point in management's search for increased profits is often the corporate profit and loss account, where both revenues and costs are aggregated into broad functional categories. When management review the gross figures and deem, for example, that the company will hold expense growth to 5% in the presence of 6% annual sales growth, they assume that they can control blocks of expenses represented by broad categories such as cost of goods sold, or marketing, selling and distribution

expenses. However, it has been argued that management cannot control expenses at this level (Cooper and Kaplan, 1991).

CPA eliminates the necessity for management to rely solely on profit and loss account figures when considering strategies to control costs. CPA encompasses the evaluation of revenues and expenses in terms of the customer's contribution to hotel profits. By identifying the impact of the customer on the organisation's profitability in this way, management is able to focus on the effectiveness and efficiency of operating departments in servicing different customer's needs. By eliminating activities that do not add value to the trading relationship with customers, management can cut costs, without creating a corresponding reduction in customer satisfaction.

(ii) Strategy Implications

Bellis-Jones and Develin (1992) state that a clear view of customer profitability is essential for evaluating and developing a sound commercial strategy. It is the only way of linking the company's external trading relationship at customer level to its internal cost structure. They add that this is not an end in itself but acts as a base for developing a more credible and focused strategy.

CPA enables management to base long-term customer mix decisions on profit maximisation rather than revenue maximisation objectives (Dunn and Brooks, 1990). By identifying those characteristics in the customer base which constitute a strong contributor as opposed to a loss maker, management is in a better position to direct future sales, marketing and product development focus towards the profitable customers and avoid the marginal or unprofitable ones.

Horngren et al. (1994, p119) state that CPA frequently highlights how vital a small set of customers is to total profitability. They add that managers need to ensure that the interests of those customers receive high priority and give the example of Microsoft Corporation which uses the phrase 'not all revenue dollars are endowed equally in profitability' to stress this key point.

When a customer is ranked in the 'loss category', managers may focus on ways to make future business with that customer more profitable. Expectations of service are not constants, they can be influenced. Where a particular customer or group of customers is not generating sufficient contribution, it is possible to improve the situation by manipulating the elements of the service package such that the objective is achieved (Bellis-Jones and Develin, 1992).

CPA also provides the foundation for other strategic decisions and analyses, including, for example, the assessment of the potential costs and benefits of capital investment (Dunn and Brooks, 1990). Proposed renovation, expansion or investment in technology will change the relationship between an organisation's revenues and expenses. The CPA model of the hotel's revenue and cost structure will assist management in conducting a cost-benefit analysis for such capital investment. A new function room, for example, would affect the revenues and expenses connected with the conference and banqueting customer group. Management can evaluate the proposed expansion by considering forecast increases in the room nights, average daily rates and banqueting revenues associated with this customer group, against the cost of the addition.

In addition, there is a potential role for the CPA model in the formulation of profit projections, as it provides management with the facility to simulate the impact of price adjustments and capacity allocation decisions on the potential profit contribution of their customer base (Downie, 1995).

1.5 Customer Profitability Analysis: Matching Costs to Customers

The implementation of CPA within a hotel environment necessitates a change in current accounting approaches to revenue and cost allocation. It requires an adjustment from the way in which revenues and expenses are traditionally recorded by operating and service departments, to their identification by customer group. While revenue data by customer group can be sourced from the hotel's property-management system, sales and catering records, and direct billing, the key to CPA lies in the selection of an appropriate costing method as a means of analysing customer costs. The starting point

in the assessment of potential costing techniques for the purpose of CPA is with a review of traditional costing methods, primarily associated with product costing.

1.5.1 Traditional Costing Methods

Costs can be classified as direct or indirect. Attaching direct costs, for example, direct labour and raw materials costs, to products or services is not difficult. By definition they can be directly and conveniently associated with a particular product or service offering. The problem applies with indirect or overhead costs, and in all businesses these are a significant proportion of costs (Tayles, 1994).

The indirect or overhead cost category includes costs such as marketing and distribution expenditure. The traditional approach to costing has been to accumulate such overhead costs by functions and departments as these are convenient for financial reporting purposes. When the costing of products or services is required these departmental costs are allocated over all of the outputs or 'cost objects' being costed. The method often chosen for this allocation is some index of volume of business, i.e. a volume-based cost driver. This may be some measure of unit labour hours or machine hours. Alternatively a monetary value may be chosen, for example, labour costs or sales value (Tayles, 1994).

The essential feature of such a system is that all overhead costs are assigned to products in strict proportion to volume. Hence, if the volume of a certain product increases by 5%, the traditional cost system will assign 5% more overhead to the product.

It is argued that this method of cost allocation, which assumes that products consume *all* resources in proportion to their production volumes, actually reports distorted product costs (Cooper and Kaplan, 1988). An increasing amount of support or overhead costs are transaction-driven rather than volume-driven. This is because in the modern competitive environment companies must become more responsive to customer needs. This involves rapid development of new products, enhanced product characteristics, wider range of choice and shorter lead times. Meeting these needs has created a growing demand for support functions such as engineering and product development,

quality control and staff training. Such costs are influenced by factors such as how many parts and products the company handles and how many customer orders it processes - factors that reflect the complexity of the modern manufacturing environment (Clarke and O'Dea, 1993).

By using only volume-based recovery rates in the allocation of these costs to products, traditional costing systems tend to undercost high volume products and overcost low volume products. As a result, companies have cancelled profitable product lines in favour of loss-making items because the product costs computed by the accounting system were misleading (Maskell, 1988).

Bala Balachandran, director of the Accounting Research Center at Northwestern University's Kellogg School of Management states (Rao, 1995, p62),

Only 40% or so of cost information is now reliable. The rest is stupid allocation. The degree of error has risen to the point where companies do not know whether they are losing or gaining on any particular product.

This statement reflects the experiences of a major multinational which, Rao (1995) reports, tried to cut its unprofitable lines in the early 1990s. The result was that losses tripled, as the company inadvertently outsourced production of its best money-maker and greatly increased production of its unprofitable lines.

Much research conducted in recent years has reported that both preparers and users of cost accounting information are dissatisfied with their product costing systems, with the method of charging overhead to products identified as the major area of concern (Morgan and Bork, 1993).

Lawson Software and Price Waterhouse LLP recently surveyed more than 200 financial and operating executives throughout North America in relation to their information systems including costing information (Geishecker, 1996). The responses indicated the executives' dissatisfaction with existing systems for cost management and analysis, with fewer than half of them expressing confidence in the accuracy of the cost data available to them. This lack of reliable and thorough cost information undermines

management's decision-making ability and hampers the overall success of an organisation.

Kaplan (Maskell, 1988) states that the traditional method of assigning overheads to products arose from the scientific management movement in the late 19th century, where manufacturing companies concentrated on the optimum use of direct labour, which was at that time the largest cost factor in the production process. Overhead costs were relatively small, and the distortions arising from inappropriate overhead allocations were not significant. Information processing costs were high, and it was therefore difficult to justify more sophisticated overhead allocation methods.

Today companies produce a wide range of products; direct labour often represents only a small fraction of total costs, and overhead costs are of considerable importance. Simplistic overhead allocations using a declining direct labour base cannot be justified, particularly when information processing costs are no longer a barrier to introducing more sophisticated systems (Cooper and Kaplan, 1988; Drury, 1992).

The intense global competition of the 1990s has made decision errors due to poor cost information more probable and costly. Holzer and Norreklit (1991) suggest that over the years the increased opportunity cost of having poor cost information, and the decreased cost of operating more sophisticated cost systems, have increased the demand for more accurate product costs.

It is against this background that Activity-Based Costing has emerged.

1.5.2 Activity-Based Costing

Cost information serves many planning and decision-support roles, such as estimating profit margins of products and product lines, preparing departmental cost budgets and charging administrative services to production departments. To perform these tasks, companies presumably need reliable cost information (Johnson, 1992).

According to Clarke and O' Dea (1993), the emergence of Activity-Based Costing (ABC) may be seen as a response to the need for a management accounting system

which is supportive of an organisation's strategy of being highly competitive in an international business environment. Johnson (1992) states that the current attention on ABC reflects a desire, on the part of management, to improve the cost information available to them for pricing and product mix decisions.

Although the earliest references to ABC date back to the 1960s (Johnson, 1992; Staubus, 1971, 1990), it was only during the last decade that ABC attracted widespread interest with operating systems, based on the ABC concept, being implemented (Innes and Mitchell, 1992).

The fundamental difference between the traditional method of product costing and ABC is the way overheads are assigned to products. The ABC approach is not to assign overhead costs using an index of volume but to relate those costs (or organisational resources) to the activities that cause or 'drive' them to be incurred in the first place (Cooper and Kaplan, 1991). In essence, the basic premise of ABC is that it is activities and not products that consume resources; products simply consume activities (Roslender, 1995).

Within ABC, the objective is to identify the major activities taking place in the organisation and calculate the cost incurred to perform each activity. Berliner and Brimson (1980) define an activity as what an enterprise does - the way time is spent and the outputs of the process. Examples of activities include completing agreements, handling materials, producing marketing material and processing customer orders.

The method whereby ABC alters the analysis of cost from expense category by department to an analysis of activities performed is illustrated in Figure 2. ABC links costs to activities and restates costs according to the way resources are consumed by activities. It is important to note that ABC does not limit cost analysis to overhead activities. It is concerned with all activities, both direct as well as overhead (Ward and Patel, 1990).

Traditional Costing View		Activity Based Costing View	
<i>Sales & Marketing Department</i>		<i>Sales & Marketing Department</i>	
	£		£
Salaries	350,000	Enter Orders	95,000
Travel Expenses	28,000	Update Price Lists	34,000
Supplies	25,000	Make Sales Calls	150,000
Systems	90,000	Answer Customer Queries	75,000
Administration	25,000	Process Special Orders	21,000
		Schedule Mktg. Campaigns	30,000
		Develop Advertising Copies	67,000
		Administer Department	46,000
Total	518,000	Total	518,000

Figure 2 - An Example of the Activity View of Costs in a Department

The cost of resources consumed by activities are assigned to those activities based on a measurement of the quantity of resources used or *cost driver*. Cost drivers represent the allocation bases used by an ABC system. For example, if the cost of the production scheduling activity is generated by the number of production runs undertaken, then the number of set-ups would represent the cost driver for production scheduling.

Having established the amount of resources consumed by each activity, activity costs are traced to products, again using various cost drivers as the basis for allocation - the cost drivers reflecting the consumption of activities by the products. For example, if the cost of quality control is driven by the volume of inspections carried out, the number of inspections would be the cost driver for assigning quality control costs to products.

It should be noted that the total costs of the organisation do not change under ABC. It is the way that overheads are assigned to products and, therefore, the individual product costs that change (Clarke and O'Dea, 1993).

In many ways, ABC extends conventional accounting theory rather than challenges or overturns it. As with traditional cost systems, ABC is firmly based on volume, in the sense that costs are assigned to products using a multiple of a base unit. However, in ABC the range of permissible bases is extended to include, for example, number of

transactions orders, receipts, set-ups, etc. (Staubus, 1990). In this way, ABC systems achieve improved accuracy over traditional cost systems because they use more - and different - types of cost drivers as a means of attributing overhead costs to activities and then to products (Turney, 1991).

The essential differences between traditional costing and ABC are summarised in Figure 3.

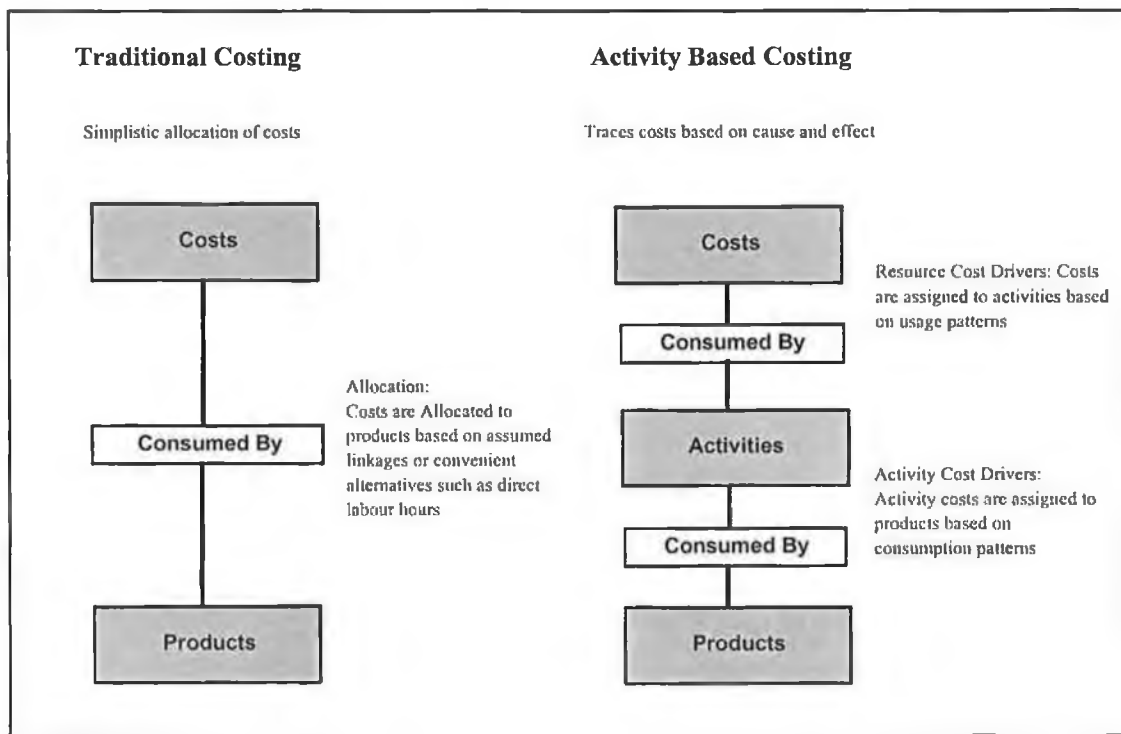


Figure 3 - Comparison between Traditional Costing and Activity-Based Costing (Adapted from Cokins et al., 1993, p11)

1.5.2.1 Activity-Based Customer Profitability Analysis

While much of the current literature on advanced cost management and ABC has directed both management and accountants towards alternative cost methodologies, attention has remained primarily on product cost development (Howell and Soucy, 1990). However, the advanced costing techniques used to develop product costs are equally applicable to other cost elements, in particular, relationships with customers (Kock, 1995).

No two customers are the same, even when they are in receipt of an identical product. Profitability differs greatly because of the varying levels of service and support required to meet the needs of each customer or group of customers, but conventional accounting methods rarely reveal such differences (Smith, 1993). Using ABC information, overhead costs are assigned to those customers to whom services are provided. In addition, the revenue generated by each customer and all direct costs are considered. The net result is the establishment of a customer profitability portfolio showing the financial contribution of each customer to the company's overall profitability.

Because ABC reveals the links between performing particular activities and the demands those activities make on the organisation's resources, it can give managers a clear picture of how customers both generate revenues and consume resources. The profitability picture that emerges from the ABC analysis helps managers focus their attention and energy on improving activities that will have the biggest impact on the bottom line (Cooper and Kaplan, 1991).

Cost managers often refer to the 'Pareto Relationship' (Johnson, 1992), stating that typically 80% of revenue is generated by 20% of the customer base - the same holding true for profits. Using ABC it is often discovered that 60% of customers produce two or three times total profit. The remaining 40% consume more resources than revenues generated - they are losing money (Cokins et al., 1993).

This type of information derived from the ABC analysis provides management with a clearer insight into the actual profitability of their customer groups and provides a sound basis for customer mix decisions, both in the short and the long term.

According to Smith and Dikolli (1995), the impact of ABC on customer profitability analysis has attracted little attention in management accounting literature. They report that Howell and Soucy (1990) and Smith (1993) have examined the importance of customer profitability without recognising the potential of ABC in the development of an accurate CPA. This is a significant finding when one considers the major

implications that ABC is reported to have on the effectiveness and efficiency of a CPA system.

As emphasised by Smith and Dikolli (1995), the role of the mechanics of ABC in developing a CPA should not be underestimated. With ABC, general ledger amounts are dissected, making the assignment of costs to customers easier. Cost items, such as training costs, holiday pay and employer's liability insurance, might be conveniently omitted from a non-ABC customer profitability analysis because of the complex analysis required to divide the general ledger amounts between the activities of different personnel.

Also, resource to activity allocations, for example, gas, water and electricity, provide a more accurate representation of resource consumption by customers. A non-ABC alternative is likely to cause customer-cost distortions in such translations. In addition, the use of multiple cost drivers will assist in the assignment of activity costs to customers, where otherwise arbitrary allocation methods would be employed.

It is crucial that any organisation implementing ABC remains customer focused (Kock, 1995). Johnson (1992) suggests that activity-based concepts are being oversold and that focus on total customer satisfaction is of paramount importance. He argues that if customers really want frequent deliveries in small-lot sizes, and an alternative supplier can meet the customer needs, then an activity analysis which reveals the customer as unprofitable might be misleading to management. This assumes that they are prepared to decline the customer's business and allow a competitor to supply that customer. Using ABC in CPA, management may indeed accept that the customer is unprofitable but be willing, nevertheless, to meet the customer's needs. Kaplan (1992) discusses three types of potentially unprofitable customer who might be retained:

- the new and growing customers, who promise profitable business in the future and may provide a stepping stone for penetrating lucrative new markets;

- customers providing qualitative rather than financial benefits, including customers at the edge in the development of new markets who provide valuable insights into likely trend movements in consumer demand;
- customers providing increased capability because of their status as recognised leaders in their markets or fields of expertise.

Thus, where a CPA reveals that a particular customer is unprofitable, it does not necessarily follow that this customer should be eliminated. Nor does it follow that the customer must be persuaded to accept terms and conditions that will reduce the customer's level of satisfaction. Negotiations with a customer might well reveal that less frequent deliveries would actually benefit the customer (i.e. less workload for the receiving officer, fewer purchase orders, fewer transaction input entries, less paperwork) without causing costly stockpiles.

Clearly, there is scope for negotiating with customers to influence their behaviour, so that they act in ways which are more profitable for the firm, without compromising the customer's level of satisfaction.

The overriding consideration with CPA is that management will at least be armed with information about unprofitable customers and can focus attention on developing innovations/strategies that might reduce the lack of profits of a particular customer, without reducing the customer's satisfaction (Smith and Dikolli, 1995).

1.5.2.2 ABC: Improved Information for Decision-Making

The principal benefits accruing from ABC implementation may be considered in terms of the contribution of ABC information to both investment and operating decisions.

Profit Information and Investment Decisions

ABC's greatest value to date has been in understanding the behaviour of overhead costs and their relationship to products, services, customers and market segments (Ward and Patel, 1990; Drury, 1992). Accurate cost, and thereby accurate profitability information, enables management to make the right decisions regarding the allocation of resources

i.e. strategic decisions on the investment of fixed and working capital (Sharman, 1990, 1991; Cooper and Kaplan, 1988; Jeans and Morrow, 1989).

Scarce investment funds must be allocated to those activities which will increase profitability. Since investment will actually be made in the resources which are consumed in the performance of activities, the ABC approach is critical in supporting such investment decisions (Ward and Patel, 1990).

An ABC system supports key strategic decisions including those to

- price a product, service, order or contract
- improve, expand, continue or discontinue a product or service
- increase, decrease or renegotiate business with a customer
- expand, maintain or exit from a market segment
- reconfigure activities that cause products, services or market segments to be unprofitable.

Many of the above decisions will involve some form of investment or divestment. Hence, in order to fully benefit from the application of ABC in decision-making, management will be required, not only to break conceptually from traditional cost accounting systems, but also to be willing to act on the insights that the ABC analysis provides (Cooper and Kaplan, 1991).

Performance Measurement and Operating Decisions

ABC's contribution to performance measurement can greatly enhance operational decision-making (Ward and Patel, 1990).

Performance measurement ensures the successful implementation of a firm's strategy through the monitoring of operational performance compared to the objectives and targets developed as part of the business planning process. Performance measurement is also used to identify and eliminate activities that do not add value (Ward and Patel, 1990).

Using ABC, in conjunction with consideration of those services which the customer regards as value-adding (Kock, 1995), management will be able to identify precisely which activities are adding value to the business and those which are not. By merely knowing the cost of activities, potential activities are highlighted where steps can be taken to improve profitability (Drury, 1992).

Based on ABC information, management may decide to reduce or eliminate the number of non-value-adding activities performed by, for example, changing the production process, acquiring new technologies or changing the product design/mix (Clarke and O'Dea, 1993; Turney, 1991).

The net result of such operating decisions will be a reduction in costs and the optimisation of operating efficiency (Howell and Soucy, 1990; Kleinsorge and Tanner, 1991; Rao, 1995).

1.5.2.3 ABC and Service Industries

Despite the growth of the services sector in recent decades and its increasing importance in terms of contribution to economic prosperity, most management accounting techniques are still based on factory costing and are taught as aids to the manufacturing process (Bussey, 1993). Not surprisingly, when ABC was first suggested as a new costing method, it was put forward principally as a manufacturing costing technique. Indeed, much of the evidence of ABC implementation has centred on the manufacturing sector, with ABC systems currently in operation in manufacturing concerns such as Rank Xerox, IBM and Hewlett Packard (Bailey, 1991).

However, it has been suggested that there is no fundamental reason why ABC should remain the preserve of manufacturing organisations (Drury, 1992). Hicks (1992) argues that ABC applies to all types of business organisations. He states that the ABC principles applied in a manufacturing setting can also be used to develop relevant cost systems for service firms. As Bussey (1993) states, most of the changes in the manufacturing sector which led to the introduction of ABC apply just as much to

services. Cooper (1988) documents those changes in the manufacturing sector stating that the introduction of ABC was in response to inaccuracies in traditional product costing techniques resulting from or exacerbated by

- (a) a large-fixed cost base,
- (b) a relatively small direct labour force,
- (c) high incidence of technological change,
- (d) the general decrease in the costs of IT and accounting systems,
- (e) growth in product diversity,
- (f) growth in competition,
- (g) the extent of de-regulation.

While he demonstrated these factors against a manufacturing background, many of them are also attributable to service industries, with one notable exception - in many service organisations labour is still king. Notwithstanding, case study evidence exists which supports the successful application of ABC concepts in such labour-intensive service organisations (Chaffman and Talbott, 1990).

To date, the implementation of ABC in the service sector has predominantly been in service areas such as hospitals (King et al., 1994), airline and telecommunication companies (Cooper and Kaplan, 1991) and financial institutions (Sephton and Ward, 1990; Hayde, 1990). However, in recent years there has been a considerable increase in awareness across a broad spectrum of service industries, including, for example, the auto leasing industry, of the potential benefits of ABC for its role both in costing and profitability analysis. This awareness has manifested itself in several ways, including an increase in service sector participation in ABC workshops and seminars, and the increasing number of service organisations seeking management consultant advice on ABC implementation.

Service sector management has begun to realise that ABC does not have to remain the domain of the manufacturing sector.

1.6 The Application of Activity-Based CPA in Hotels

Despite the potential benefits of ABC and its suitability in CPA, there is no literary evidence to suggest that CPA, using ABC, has been implemented in the hotel sector. While Nordling and Wheedler (1992) document the implementation of CPA at the Hilton property in Las Vegas, their analysis stops at the contribution margin level. No analysis of activities in the assignment of overhead cost is completed.

Indeed, the very concept of ABC and its potential application in CPA for hotels has received little exposure in hospitality-related literature, with the exception of work published in the area by Dunn and Brooks (1990). They propose the application of CPA in hotel organisations but do not explore the potential of CPA as a method of analysis complementary to the yield management process.

The question remains. Can CPA using ABC be applied in hotels and will this analysis strengthen the yield management process?

The CPA process requires the definition of customer groups, and the accumulation of all revenue and cost data relating to those customer groups. The information contained in yield management systems actually forms the basis of this CPA database. The customer groups defined by yield management will be those applied in the CPA and the preliminary revenue information required by CPA can be obtained from the yield management system. If this revenue information is accommodation specific, CPA will require further revenue analysis incorporating customer spend in other revenue generating areas, principally food and beverage spend. Data relating to the ancillary spend of hotel guests should be accessible from the hotel property management system. If such reports are unavailable, a statistical sample of guest bills should provide average spend information for each customer group.

CPA will also require management to analyse costs and match relevant costs with customer groups. In this respect, management in other industries has turned to ABC as

an alternative to conventional costing. Can the hotel industry also reap the benefits of ABC?

As the characteristics of the hotel environment including a large labour base, high fixed costs, growth in product diversity, and decreases in the cost of information technology, parallel those of other service industries in which the application of ABC has been successful, one may conclude that ABC would be an appropriate cost assignment method in CPA for hotels.

1.6.1 Combining CPA With Yield Management to Enhance Decision Making

Having examined ABC and CPA implementation in a hotel context, the issue of the CPA/yield management relationship may be raised. Decisions relating to the customer mix must be made both in the short-term and over a long-term horizon. Yield management is essential in the short-term where hotel pricing is market driven. The focus of customer mix decisions is on the maximisation of revenue. Yield management successfully fulfils this objective.

In the longer-term, however, the emphasis must be on the manipulation of a customer mix which will result in maximum profits. Customer mix decisions must incorporate not only the revenue data relating to the sale of accommodation, but also the ancillary spend and customer cost data that CPA provides. This supplemental information will enable management to review the customer mix from a profit perspective. It will aid the identification of the more profitable customer groups to target with future marketing resources, and, in turn, manage capacity and product diversity over a long-term horizon.

In this way CPA can be viewed as an extension of yield management, the information from CPA being incorporated with yield management information in order to make decisions about the strategic direction of the customer mix.

1.7 Conclusion

Yield management has enhanced the ability of many hotel organisations, including Hilton International, to maximise revenues generated, and target both sales and marketing activity more effectively. The International Hotel Association (1993, p39), in recognition of the potential benefits accruing from yield management, have heralded it as the 'must-have business planning tool for hoteliers in the 1990s and beyond'.

Many yield management systems do not incorporate two critical constraints, the cost implications of the customer mix and guest ancillary spend. These factors, coupled with room revenue, will determine the profitability of a hotel organisation.

The information derived from CPA enables management to view the profitability of the organisation from a customer perspective. This information can play a valuable role in the organisation by focusing long-term customer-related decisions on profit objectives. Hence, the combination of the information derived from CPA with current yield management practices will provide hotel organisations with the route to sustainable profitability and competitive advantage.

The success of CPA is dependent upon the selection of an appropriate method of matching costs with customer groups. Following a review of traditional costing and ABC, it may be concluded that ABC would be an effective and accurate costing method to apply in CPA in a hotel environment. Chapter Two examines the use of ABC in CPA, in terms of the issues arising from its implementation.

2. The Development and Implementation of an Activity-Based System

2.1 Introduction

The preceding chapter introduced ABC in the context of CPA. However, many of the issues which arise in relation to the CPA process relate specifically to the implementation of ABC in the assignment of costs to customer groups. In this chapter some of these issues arising from ABC implementation will be addressed.

2.2 The Development of an Activity-Based System

In this section, the key issues underlying the development of an activity-based system are addressed. Particular reference is made to the work of Turney and Stratton (1992) who have contributed a very comprehensive two-dimensional model as an approach to ABC implementation. The work of other authors, notably Cooper (1989), is also examined.

2.2.1 Purpose of the System

Cooper and Kaplan (King, 1991, p26) state that the appropriate way to design an ABC system 'depends on what you want the system to do.' They suggest that if product or customer profitability is being assessed, a comparatively simple ABC system can be designed. In contrast, if the analysis is being conducted in order to improve the efficiency of the processes taking place within the organisation, they state that it is necessary to conduct a deeper and more comprehensive analysis of the underlying activities.

Turney and Stratton (1992) address the issue of system design by presenting an ABC model which contains two dimensions: a cost view and a process view (see Figure 4). The two-dimensional model incorporates two different types of activities, micro and macro activities, thereby addressing the two distinct purposes of ABC information, the

customer/product costing objective and the performance improvement objective. The micro, or detailed activities, are part of the process view of ABC. The macro, or summary activities, are part of the cost view of ABC.

The process view of ABC contains information about why work is done and how well it is performed, and is used to assess the performance of work within the organisation. This information is obtained by focusing on the micro activities taking place in the organisation. Turney and Stratton (1992) define micro activities as detailed activities, which are reflective of individual units of work and are intended to support activity improvement.

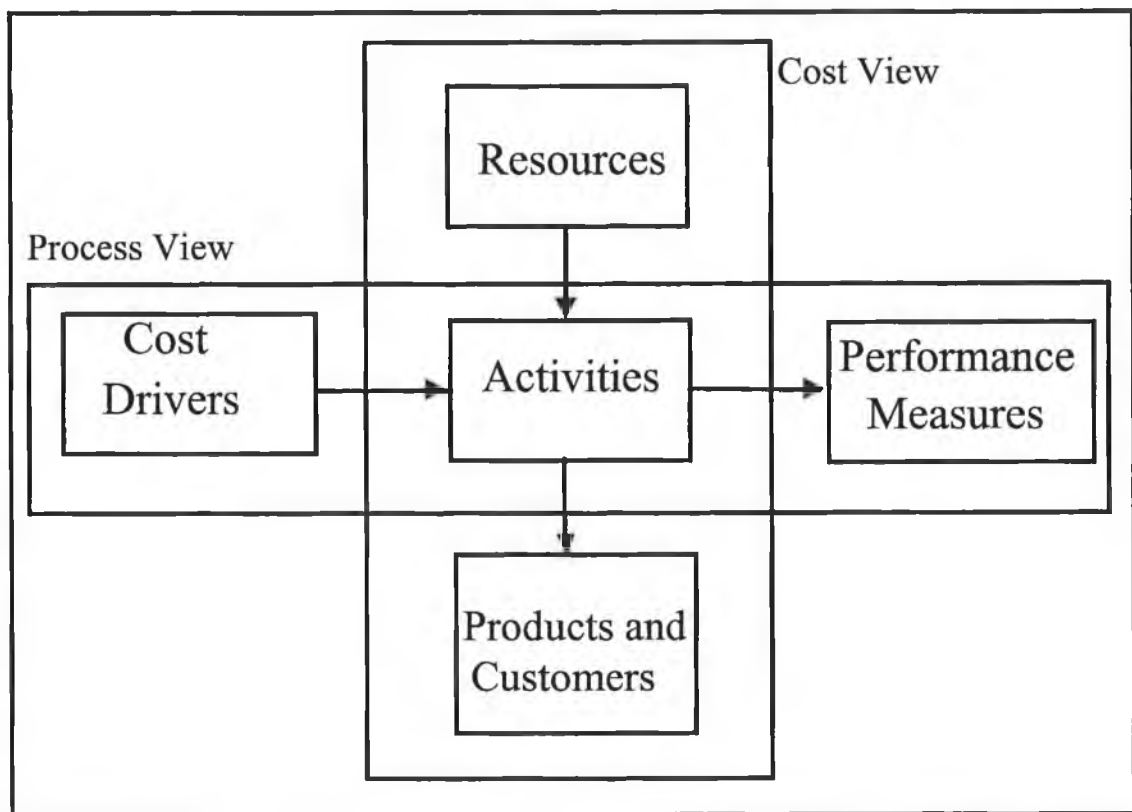


Figure 4 - The Two-Dimensional ABC Model (Source: Turney & Stratton, 1992, p47)

The cost view of ABC contains information about the cost of resources, activities and products and customers. In order to obtain this information, Turney and Stratton prescribe that management should focus on macro activities, which are an aggregation of related micro activities. Macro activities are such that the level of aggregation

applied is too great to guide the improvement of individual activities. The primary purpose of macro activities is to facilitate strategic and tactical analyses, such as evaluating customer profitability, prioritising improvement projects and setting cost targets.

2.2.2 An Integrated or Stand-Alone Approach to ABC Implementation?

Glad (1993) states that a firm must make a choice as to whether the ABC system will be integrated or stand-alone. The integrated approach implies that cost calculations must be an integral part of the underlying accounting and information systems in the organisation. Glad states that relatively few fully integrated systems have been developed which are available 'off the shelf', and comments that many of the support systems such as debtor, stock control and resource planning support systems do not incorporate activity-management features.

The stand-alone approach implies that information will be drawn from the accounting and information systems and be manipulated in a separate ABC system, or using a spreadsheet programme. Connolly and Ashworth (1994) discuss the spreadsheet approach to ABC implementation, stating that spreadsheets have the advantage of being widely used in most organisations, are cheap to obtain and are highly flexible. They suggest that this combination of qualities makes the spreadsheet an attractive option for 'one-off' problems focused on a few key issues and using summary data. However, the spreadsheet may not be appropriate for large volumes of data, in terms of memory capacity and data integrity.

With respect to the advantage of stand-alone ABC packages over spreadsheet solutions Connolly (1995, p46) states that ABC packages

spare the user the need to go through the often complex process of defining and setting up relationships, putting in place complex calculation procedures and creating large numbers of data tables.

Rao (1995) states that the leader in the development of 'off-the shelf' stand-alone packages is ABC Technologies, whose client base includes IBM and Hewlett-Packard, with more than 250 consultants including Arthur Anderson, Coopers and Lybrand and

Ernst and Young selling its products in conjunction with their services. Other ABC package vendors include Armstrong Laing, Sapling and Lead Software.

2.2.3 Corporate Acceptance of the System

Before a system such as ABC can be introduced into an organisation, several issues have to be addressed. These include educating management about the system, addressing any fears or reservations that management may have regarding the introduction of the system and securing management commitment to the implementation of the system. In addition, the co-operation of staff must be obtained in order to successfully implement the system.

Morrow and Connolly (1994) state that, in general, when ABC projects fail, the failure can be clearly attributed to a lack of visible management support for the project, arising from a lack of knowledge as to how the ABC project will contribute to changing the way that the organisation conducts business. Therefore, it is essential to educate management about ABC prior to implementation in order to introduce them to the theory underlying ABC and its potential benefits (Cooper, 1991).

In addition, it must be recognised that it may be necessary to allay fears that management may have in relation to the introduction of a new accounting/information system. It is not always easy for management to accept change, particularly if the traditional way of conducting business is being challenged (Morrow and Connolly, 1994).

The key to the successful implementation of an activity-based system is to involve management from an early stage in the implementation process in order to ensure maximum acceptability for the new system (Glad, 1993). As ABC involves fundamental changes in how a business is managed, the effects of ABC will be noticed throughout the organisation (Kleinsorge and Tanner, 1991). ABC involves not only management and those in the accounts department, it also requires the input and co-operation of staff working in all operating departments. French and Bell (1984) emphasise how important it is to obtain the commitment of top managers for any new

system. If staff perceive that top managers are merely paying lip service to ABC, the message will be that ABC is just another programme that will pass - ABC is not important. Therefore, in order to effectively implement ABC and ensure the co-operation of all members of personnel, it is essential that management commitment to the project be secured.

2.2.4 Activity and Driver Analysis

Sharman (1994, p13) defines activity and driver analysis as a

structured methodology with which to identify significant activities performed by an organisation as well as the drivers and other characteristics of those activities.

He states that an activity analysis may be used to capture a variety of different attributes such as the amount of time spent performing activities, whether they are perceived to be value-added or non-value-added, what the quality level of both the process and its output is, and whether the activity was performed on time. Activity analysis is also used to determine what resources (people, machines, buildings) are consumed as the activities are performed.

Sharman (1994) recommends that, for the purpose of ABC, it is preferable to limit the activity analysis to capture information on time spent performing activities and to identify drivers. McBride (1993, p6) states that activities and the time and resources spent by each person on each activity are identified by interviewing all staff to determine 'the tasks they carry out in detail.' He comments that if it is not possible to involve every member of personnel in the exercise, an interview should be held with each budget holder. He concludes that the activity analysis process can be refined at a later date by increasing the interview sample, interviewing 'at least a representative cross section of staff within each cost centre.'

In contrast, Sharman (1994) suggests that only those who occupy a supervisory or management position should be interviewed for the purpose of the analysis, and states that it is unnecessary to interview individual members of personnel as managers and supervisors will have an adequate understanding of activities performed by the staff for

whom they are responsible. He proposes that only activities which require five per cent or more of an individual's time should be captured in an activity analysis.

In relation to the identification of activities within a hotel environment, Kock (1995) states that in restaurants, and in the hospitality sector in general, it is more complex to implement ABC systems as the activities used for producing different services are not easily traced.

With respect to driver identification Sharman (1994) comments that is unnecessary to collect driver data during the activity analysis. He recommends that data collection be carried out following interpretation of the results of the activity analysis by the implementation team. At that stage, members of the team can make decisions as to which activities are significant and those which can be aggregated. These decisions will dictate the type of driver data to be collected.

2.2.5 Activity Identification

The activity analysis, conducted in an organisation, can result in a vast number of activities being identified. Mc Bride (1993) suggests that in an initial ABC implementation the workable number of activities should be limited to a maximum of between twenty and thirty. Innes and Mitchell (1992) suggest that in order to ensure that a system is workable, it may be necessary to group the less important activities, i.e. sub-activities, into significant activities. Consistent with this approach is the Turney and Stratton (1992) two-dimensional ABC model which proposes the use of either micro and macro activities, depending on the purpose of the activity-based system.

2.2.6 The Identification of Drivers

The design of an activity-based costing system depends largely on two considerations: how many cost drivers to use and which cost drivers to use (Cooper, 1989).

The number of activities performed in an organisation is typically so great that it is not economically feasible to use a different cost driver for each activity. Many activities

have to be aggregated and a single driver used to trace the costs of the activities to products.

According to Cooper (1989), the minimum number of drivers required by an ABC system depends on the desired accuracy of reported product costs and on the complexity of the product mix being produced.

As the number of drivers used increases, the accuracy of reported costs rises. Consequently, the greater the desired level of accuracy, the larger the number of drivers required to achieve that accuracy.

However, evidence suggests that, in practice, there are certain risks associated with the use of an excessive number of drivers. Pemberton et al.(1996) document the experiences of Dayton Technologies where the initial ABC model developed began as a very complex and cumbersome one that contained more than forty drivers. This led to a structure that was not only difficult for the accountants to understand and maintain, but it was nearly impossible to communicate effectively to managers and staff. After careful reconsideration, Dayton reduced the number of drivers to eleven.

Sharman (1994, p14) states that it is important for the purpose of implementation to avoid 'getting hung up on details'. He adds that there is no correct number of drivers in an ABC system, and that most practitioners agree that the simpler solutions are the most robust and easy to use.

In relation to the complexity of the product mix, Cooper (1989) states that it plays a key role in determining whether the costs of two (or more) activities can be aggregated and traced using a single driver without introducing unacceptable levels of distortion. He highlights the three factors which determine if a single driver is acceptable

- the degree of product diversity
- the relative costs of the activities aggregated
- the degree of volume diversity.

He discusses the interaction of these three factors and states that, in practice, the identification of the number of cost drivers needed necessitates a mixture of judgement and analysis. The first step is to identify the inputs or costs with a high monetary value. The second is to consider how diverse the products are and in what volume they are produced. The isolation of the highly diverse products will enable the identification of those major costs which can be aggregated without introducing excessive distortion into product costs. The costs with a smaller monetary value can then be analysed in order to establish which of them can be aggregated with major costs and which need to be aggregated separately (Cooper, 1989).

One may examine the selection of the number of drivers in the context of Turney and Stratton's (1992) two-dimensional model. Micro activities are the focal point of improved efforts. They are not used to cost products - the cost of micro activities is assigned to macro activities, not to products.

The cost view of ABC uses two types of driver to assign cost to macro activities, outputs and customers. *Resource* drivers assign the cost of resources to activities. For example, the resource driver 'percentage of effort' might be used to assign the cost of people to the activities they perform. *Activity* drivers assign the cost of activities to products and customers. The cost of a macro activity is assigned to products using a single cost driver, which reduces the cost and complexity of the ABC model because activity drivers are not attached to micro activities. For example, the activity driver 'number of purchase orders' might be used to assign the cost of the activity 'preparing purchase orders' to the parts that are purchased.

Turney and Stratton (1992) propose three criteria in preparing macro activities for the cost view approach to ABC. They state that micro activities which meet all three criteria should be combined into a macro activity. The three criteria are as follows.

- Only activities performed at the same level can be combined. Level relates to the output or customer of the activity. For example, testing an individual die (unit level),

setting up the test equipment to test a batch of wafers (batch level), and developing a test program for a particular die (product level) could not be combined.

- Activities that used the same activity driver can be combined without diminishing the reported accuracy of product costs. Activities that used different activity drivers could not be combined without dropping one or other of the drivers (only one activity driver per activity is possible in an ABC model).
- Activities included in a macro activity had to be of common purpose or function. If, for example, activities are part of two totally different processes, their cost cannot be assigned to the same macro activity.

Once the minimum number of drivers required has been determined, the issue of the selection of appropriate drivers may be raised. Cooper (1989) states that three factors should be taken into account when selecting a driver

- the cost of measurement
- the correlation of the selected driver to the actual consumption of the activity
- the behaviour induced by the use of the driver.

According to Cooper (1989), the objective is to design an ABC system that provides the most benefit for the lowest overall cost. Thus, a cost driver that induces beneficial behaviour but is expensive to use and has a relatively low correlation to the actual consumption of the activity may still be selected if the behaviour effect dominates. For example, if the behavioural objective is to reduce production time, production time may be chosen as the cost driver for certain activities even though there is little correlation between the activities and production time. In contrast, a driver that is expensive to measure and induces harmful behaviour but has a high degree of correlation may be selected if the cost of errors dominates. This can occur, for example, if competition is severe and knowing accurate product/customer costs is a strategic necessity.

It must be noted that the data relating to a particular driver may not be available in an organisation, for example, in a service environment where measurements are often not in place (Kock, 1995). Sharman (1994) addresses this issue by stating that it will be necessary to substitute alternative drivers when the data is not available for the correct one.

2.3 ABC: The Implementation Experience

As far as one can generalise, the experiences of companies using ABC are broadly positive (Clarke and O'Dea, 1993; Roslender, 1995).

Bailey (1991) investigated ABC implementation in ten companies, with annual turnover ranging from £12 million to £1.2 billion, all of which had completed implementation of ABC and were using the results. Hewlett-Packard (Queensferry, UK) was the first company among contributors to implement ABC and had been using it since November 1988. At the time of the study, expected long-term benefits such as reduced costs and improved profitability had not yet manifested themselves in many of the sample companies, with only five out of the ten companies reporting these benefits.

However, all companies stated that more accurate product cost information had already come to light and 70% admitted to improved management information. Nine out of the ten companies noticed both a definite improvement in cost awareness by department managers and much greater interaction between finance and production departments.

The following problems were reported by the companies sampled:

- 40% stated that gathering of data had been a problem, referring to the difficulties of extracting the relevant data from the existing financial accounting or management control systems;
- 30% responded that convincing other levels of management had been problematic;
- 20% admitted problems with software and system design;
- 30% stated that in future implementations, they would look for better software;
- 20% stated that there had been undue pressure placed on management time.

When participants were asked to mark the success of their project out of ten, the lowest figure given was seven and the average was 7.8. There was a general feeling of achievement among the managers interviewed.

Innes and Mitchell (1992, pp 60-61) illustrate the wide range of benefits accruing from the design and implementation of ABC at three different sites. They conclude that the problems encountered in adopting ABC appear to 'weigh lightly' when compared with the advantages, and share the considerable optimism of their interviewees, leaving their readers with the observation that 'ABC is worth serious consideration'.

Rao (1995) reports on the experiences of a software distribution company which discovered, through ABC implementation, that a supposedly profitable high-margin product was generating so many calls to its help line that it was actually a money loser. Dropping that one product improved company profitability by nearly 10%.

At Hewlett-Packard's North American distribution organisation, three pilot ABC studies identified more than \$2 million of potential savings for the organisation, with management gaining valuable insights such as that 51 customers accounted for more than 85% of all orders. The model is now used by the organisation to analyse customer and channel profitability, develop contract discount structures and determine the impact of outsourcing distribution functions (Rao, 1995). Further evidence of the benefits accruing from the application of ABC in CPA is documented by both Pemberton et al. (1996) and Marshall (1995).

Bhimani and Pigott (1992) report that managers and accountants at Evans, a pharmaceutical company (UK), view ABC as having enabled product costs to be traced more directly to overhead items which had previously been allocated on an arbitrarily averaged basis across a wider range of production activities. ABC has also caused a more widespread permeation of cost-consciousness within the organisation's operational areas which was not anticipated and has led to more thorough economic appraisals of its practices and enhanced evaluations of its rationalisation programmes. Management believes that placing a monetary figure on the value of ABC is impossible

because of its many effects on cost management in general and, also, due to the fact that ABC's impact continues to emanate subsequent to initial ABC development expenditures.

2.4 The Current Status of ABC

Despite evidence relating to the many benefits reaped by those organisations which have implemented ABC, the rate of adoption of ABC in many sectors of industry has been slow.

Staubus (1990) states that the unhelpful explanation for the lack of acceptance of activity costing is that 'consumer's' perceptions of the prospective costs and benefits of adopting activity costing have been weighted more heavily on the cost side. Further inquiry has identified several characteristics associated with the lack of acceptance: direct costs of operating the cost system (or two cost systems), cognitive and educational costs, emotional costs, and dislike of the results because the model yields higher and more variable costs than conventional costing.

In the body of their review, Innes and Mitchell (1992) identify several reasons for the slow adoption rate of ABC among organisations. They state that practical difficulties exist regarding the selection of cost drivers. They also highlight that there is, as yet, very little known of the behavioural, organisational and economic consequences of adopting ABC. However, probably the most damning shortcoming of ABC identified in the review is that, as yet, there is little evidence that ABC improves corporate profitability. This finding is in conflict with the case study evidence presented in the preceding section, which would suggest that profitability gains *can* be attributed to ABC implementation.

In October 1991, *Management Accounting* (UK) published the results of a survey of practising management accountants which indicated that, although there was widespread interest in ABC in the UK, the majority of those who had got beyond the stage of considering it had rejected it. This appears to be because it was perceived to be too complex (CIMA, 1994).

Drury et al. (1992) report that only 3% of their sample of manufacturing companies had introduced ABC systems. Bright et al. (1992) are sceptical of the 32% of their respondents who claimed to have such a system in operation (and the further 28% who claimed they would within three years), preferring to estimate a modest 10% uptake.

Nicholls (1992) reports on a survey of UK companies relating to the extent of ABC implementation. 10% of the companies indicated that they had implemented ABC; 62% were investigating ABC techniques to determine suitability; 18% were piloting ABC techniques; and, companies that positively did not intend to implement ABC comprised some 5%.

In 1992, a survey was commissioned by the Chartered Institute of Management Accountants (CIMA) to investigate management accounting practices in Irish companies (Clarke, 1993). Respondents were asked whether their company planned to introduce any 'new' cost/management accounting techniques, such as ABC and strategic management accounting, within the next two years, i.e. by 1994. Findings indicated that only a small number of companies, less than fourteen percent (14%) of respondents, had an activity based costing system, but that the figure would increase to nearly half of sample companies by 1994 (48%) - although Clarke comments that this may be an overestimation.

The main benefits perceived from the introduction of such techniques included more relevant information for decision making (78%) and improved product costing and profitability (74%). The major obstacle anticipated to the introduction of new management accounting techniques was the cost of change (52%). However, over one quarter (27%) of respondents indicated 'management inertia' to be a significant obstacle.

Innes and Mitchell (1991) conducted a survey of CIMA members, comprising of UK-based organisations in both the manufacturing and the financial-services sectors, to

explore their views and organisational policies on ABC. In 1990, only six per cent of respondents had implemented ABC.

A follow-up survey was conducted in 1994 (Innes and Mitchell). The major overall finding was that 16% (14 out of 89) of the respondents were now using activity-based costing or activity-based management techniques, with respondents favourably rating the overall success of ABC at, on average, four on a five point scale (with one being very unsuccessful to five being very successful). Figure 5 shows that organisations are using ABC for more than one purpose. In fact, most organisations used their ABC system for at least three different purposes.

USES OF ACTIVITY - BASED SYSTEM	
	NUMBER OF ORGANISATIONS
COST REDUCTION AND COST MANAGEMENT	11
ACTIVITY PERFORMANCE MEASUREMENT AND IMPROVEMENT	8
COST MODELLING	8
PRODUCT OR SERVICE OUTPUT DECISIONS	7
PRODUCT OR SERVICE COSTING	7
BUDGETING	6
CUSTOMER PROFITABILITY ANALYSIS	4
STOCK VALUATION	2
NEW PRODUCT OR SERVICE DESIGN	1

Figure 5 - Results of UK Survey on the Use of ABC, 1994 (Source: Innes and Mitchell, 1994, p50)

When compared with the 6% of respondents implementing ABC in the 1990 survey, it suggests that the use of the activity-based approach has been spreading. Further, more general evidence of this growth in the use of ABC is provided by a 1994 survey (CIMA, 1994) of the UK's largest 1,000 companies which found that 20% of respondents were currently using ABC.

Innes and Mitchell (1995) report that, of the 75 organisations not using ABC at present, four had used it in the past but abandoned it, 13 had considered ABC but rejected it, 43 were still considering ABC and 15 had not yet considered it. Of the four organisations that had used and then abandoned it, most had used it for product costing purposes and found that the resulting benefits did not justify the costs involved (such as data collection).

Most of the 13 organisations which had considered ABC but rejected it had overhead costs which were a relatively small percentage of total costs (under 15% of total costs) and the costs of installing an ABC system were not considered to be justified by the potential benefits. Of the 43 organisations which were still considering ABC, many noted the difficulty of finding both the necessary staff resources and staff time to implement ABC.

Nevertheless, Innes and Mitchell (1995) remain optimistic about the future growth of ABC. They state that, in 1990, the possibility existed that ABC systems might not survive, but that the evidence from the 1994 survey suggests that the activity-based approach is still growing, not only in terms of the number of organisations adopting it but also in terms of the scope of its use.

2.5 Conclusion

Several issues must be addressed when developing an ABC system. Prior to implementation, management must decide the business issues that they are seeking to address, as the proposed purpose of the system will influence not only the design of the system but also the level at which activities are examined and consequently the minimum number of drivers required for the system. The issue of software must be considered in terms of an integrated or stand-alone system.

For the successful implementation of the system, behavioural issues including the education of management and securing of management and staff co-operation have to be addressed. It is evident from recently published surveys indicating an increased usage of ABC in industry, that ABC is gaining greater acceptance. There is much to be

learned from the experiences of organisations who have already implemented ABC. Taking into account the implementation issues and experiences outlined in this chapter, a development cycle for the implementation of an activity-based CPA is presented in Chapter Three. The methodologies employed to implement the activity-based CPA in a hotel environment are also outlined.

3. Customer Profitability Analysis: The Development of a System

3.1 Introduction

Evidence, gathered through both literary searches and exploratory interviews with international management consulting firms and hotel operators, suggests that, to date, CPA, using ABC, has not been applied in the context of the hotel industry. In response to these findings, the author commenced investigation into the feasibility of applying CPA/ABC in a hotel environment.

This chapter outlines the selection of a test site, and the research methodologies and procedures utilised in the development of a customer profitability system, hereafter referred to as ProEno, at that site.

3.2 ProEno : Developing the System

The diagram in Figure 6 illustrates the essence of ProEno, which is designed to move from the way revenues and costs are traditionally recorded in accounting systems, by operating department and overhead categories (as represented on the left-hand side of Figure 6), to reporting each by customer group.

An important feature of the system is the use of ABC in the allocation of costs, with ABC recognising that not all costs can be attributed to customers i.e. *non-attributable costs*. This is based on the principle of cause and effect - if a customer does not cause a cost to be incurred in the first place, do not assign any of that cost to him. The cost is not attributable to the customer and therefore should not be included in the customer profitability calculation.

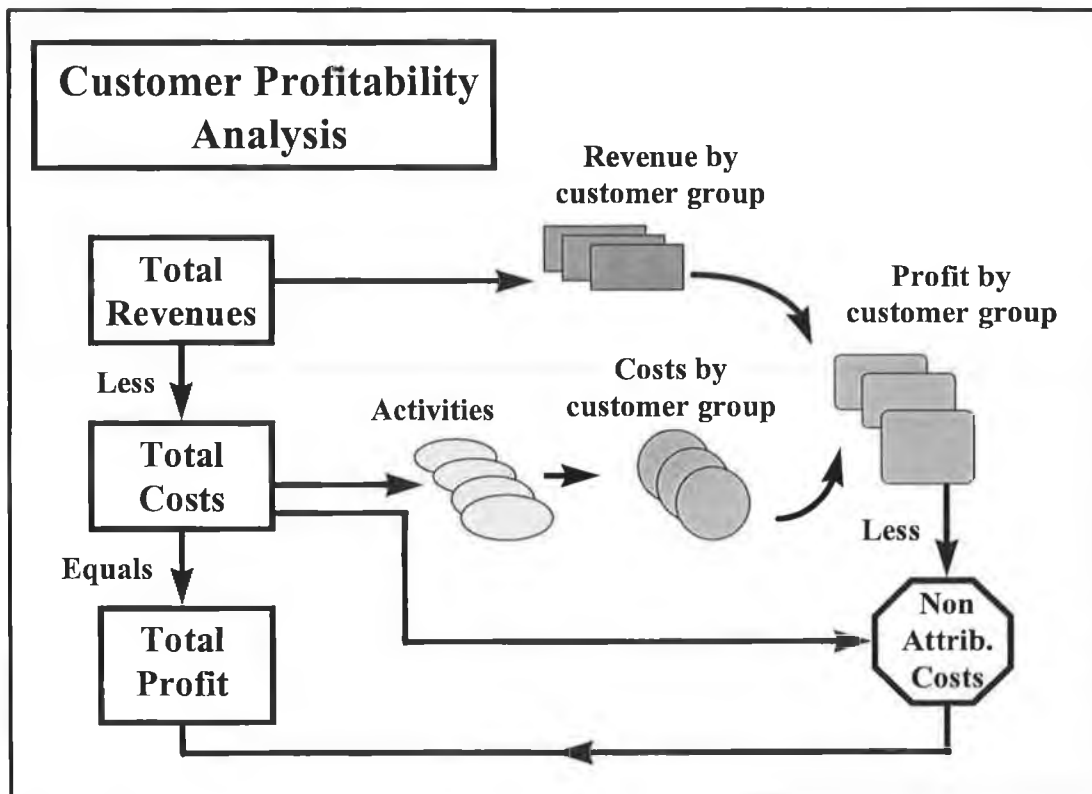


Figure 6 - Information Flows in a Customer Profitability Analysis model

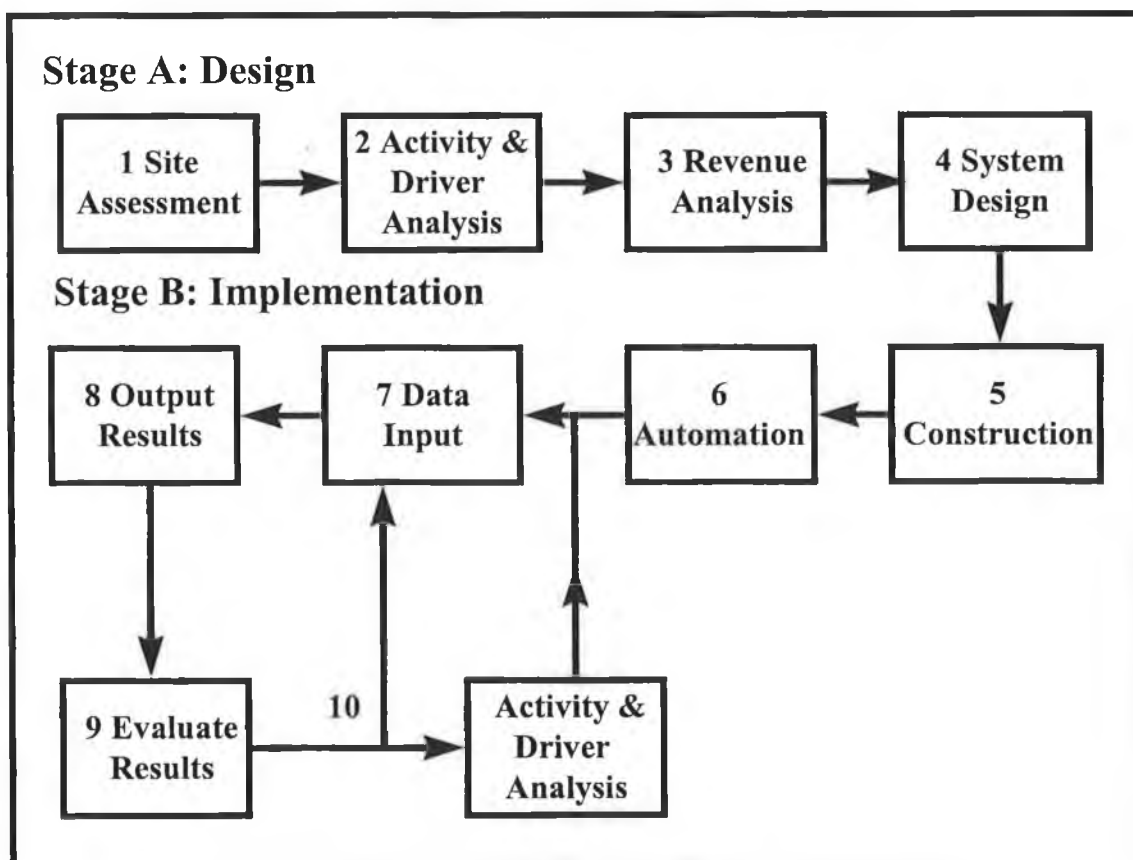


Figure 7 - The Development Cycle for the CPA System ProEno

In order to implement ProEno, a Systems Development Cycle was designed (Figure 7). The cycle, a modification of the implementation plan advocated by Cooper (1991), consists of two stages: design (Steps One to Four) and implementation (Steps Five to Ten). Steps One to Three comprise of data collection, including all revenue, cost, activity and driver information. This process is conducted using appropriate qualitative and quantitative research techniques. Steps Four to Six involve the design and construction of ProEno using a spreadsheet program. The entry of cost, revenue and driver data into ProEno constitutes Step Seven of the cycle. At Step Eight, the customer profitability information is outputted for evaluation by management (Step Nine). System Review (Step Ten) refers to the ongoing upkeep and maintenance of ProEno, and comprises of the review and updating of information at the data-entry and activity driver analysis steps in the development cycle.

The Irish Software Association and Forbairt (1995) guidelines for the development of a software product were used throughout the development cycle.

3.3 Selection of Test Site

One hotel or test site was chosen for this study for the following reasons.

(a) ABC: Considering the unique characteristics of individual organisations

A CPA system incorporating ABC cannot readily be standardised and applied at multiple sites (Coad, 1990). ABC requires the identification of activities and driver data - variables which are unique to each individual organisation. This suggests a need to develop site-specific CPA systems tailored to the specific characteristics of an organisation.

(b) Implementing a Customer Profitability System: Time and cost considerations

The amount of time required for ABC/CPA implementation must not be underestimated (Morrow and Connolly, 1994). Various studies have addressed the time involved in ABC implementation, with Bailey (1991) reporting the average time taken by sample companies to implement ABC amounting to 36.6 weeks. Several key factors were taken into account when estimating the amount of time that would be required for

system implementation at a test site. These included the scope of the project, the size of the organisation, the complexity of operations, and the type of data available in the organisation. Consideration was also given to the cost of implementation, primarily in terms of the personnel cost associated with the amount of management and staff time given to the implementation process.

These considerations, coupled with the time constraints of the study and the nature of ABC (see (a) above), rendered it unfeasible to apply Activity-Based CPA at multiple sites.

3.3.1 Description of the Test Site

Due to the sensitivity of the financial and operating information reported in this study, the following description of the test site is intended to inform the reader of the general characteristics of the property without disclosing identifying details relating specifically to the property.

The test site, hereafter referred to as the Site, is a three-star hotel development located in the centre of Dublin city. It is currently one of a group of hospitality investments owned by the holding company. The hotel is a medium-sized property with approximately 85 bedrooms. It has a well established reputation and enjoys a relatively strong market position.

3.3.2 Rationale for Selection of the Site

The following characteristics rendered the property suitable for this study.

(a) Suitability of Operations

The Site was suitable for the study in terms of the range of products/services offered and the broad mix of customer groups served by the organisation.

(b) Accessibility

As the study required a high level of on-site participation, it was essential that the hotel was accessible to the researcher.

(c) Consent of the Principals in the Organisation

In order to implement the customer profitability system, it was essential that the managing director of the holding company be willing to allow access to all of the financial and non-financial data pertaining to the Site. Additionally, management and staff were willing to co-operate with the study in terms of facilitating the researcher with activity analysis and interviews.

3.4 Time Frame

The development and implementation of ProEno began in October 1995 and was completed by November 1996.

3.5 Pre-Implementation Seminar

In order to facilitate implementation of the system at the Site, an introductory seminar was held with the managing director and members of management. For the purpose of this study 'management' refers to senior management at the Site. The aim of this meeting was to achieve a number of objectives. Primary among these was the need to introduce the basic structure of the system to attendees and explain the underlying ABC concepts. The system development cycle was also discussed, with the author taking the opportunity to highlight the level of management commitment required in order to effectively implement the system.

At this initial stage, the scope of the project i.e. the accounting period which was to be sampled, was agreed with management. Defining the scope of the project raised the issue of choosing an appropriate basis for costing. There were two alternatives to consider, that is the choice between using historical costs and future costs. It was decided to develop a system that reported historical costs instead of estimated future costs. As the purpose of the activity-based system was to report customer-related costs

that were to be used to support strategic decisions, it was felt that any distortion introduced by using historical data would be acceptable. It was also considered most appropriate to apply annual figures in the analysis and those most recently available at the time of the study were the results for the financial year 1st November 1994 to 31st October 1995. These results became available for use by the author after the final accounts were completed on the 20th of January 1996.

Reference material, including CPA information and diagrams of the system and development cycle was also distributed to attendees.

3.6 Implementing ProEno at the Site

Both the basic structure of ProEno and the steps involved in the development cycle outlined in Section 3.2, are generic, and as such, can be used as the basis for CPA implementation in any organisation. However, the manner in which the system is implemented in individual organisations will be contingent upon factors such as the range of services offered; management information needs; data availability; and the availability of the personnel/resources required to set-up and maintain the system - all of which are specific to an organisation.

In this section, each of the steps involved in the development cycle are reviewed in terms of the specific research methodologies and procedures employed during implementation at the Site.

3.6.1 Step One: Site Assessment

The objective of this step was to gain a knowledge and understanding of the organisation. This included a review of the organisational structure and the identification of operating/cost departments. The customer groupings in use in the organisation and management's decision-making approach in relation to those customer groups was also examined.

Information was obtained by means of semi-structured interviews with the managing director, general manager, and the reservations manager. The schedule of questions for

each individual interviewee was tailored to their position and responsibilities within the organisation, with key areas addressed outlined in Appendix A. The interviewer adhered to the interview schedule, and manually recorded all responses at the time of the interview. As recommended by Rudestam and Newton (1992), interviews were also tape recorded and subsequently transcribed.

The front office and accounting systems were evaluated in order to establish the type of information generated internally for use by management in decision-making. This process included a review of reports, both financial and non-financial, generated by the systems. When reviewing the cost elements identified in the organisation's management accounts, it was necessary to consult with the accounts department in order to establish how certain costs were incurred and the basis on which those costs were allocated to both operating and overhead departments. Clarification of the current basis for costing aided the identification of resource drivers during Step Two. Also, the data gathered at this stage gave an indication of the outstanding data required for the establishment of revenues and costs by customer group.

3.6.2 Step Two: Activity and Driver Analysis

The objective of this step was to identify the various activities taking place in each department of the organisation and the time taken to perform those activities. In addition, the analysis involved the identification of both resource and activity drivers.

The activity-based concepts underlying Turney and Stratton's (1992) two-dimensional ABC model were used as the basis for the identification and classification of activities and drivers. This involved taking a cost view and aggregating micro activities as macro activities using the criteria identified in the two-dimensional model.

Micro activity data was collected using structured interviews which were conducted at departmental management level - micro activities being equivalent to individual units of work in each department. These interviews were used to aid the completion of activity analysis grids, the structure of which was based on that proposed by Sharman (1994). A sample activity analysis grid is illustrated in Appendix B. The purpose of the

grid was to record the activities of all individuals in the organisation and the proportion of total time taken to perform each activity. The activity drivers were also identified on the grids. During the interviews, the following issues were addressed

- the number and classification of personnel in each department
- the identification of the key activities taking place in each department
- the investigation into the time taken to perform activities under different circumstances
- the percentage of each person's total time spent performing each activity, including overtime
- the drivers associated with each of the activities.

The criterion that only activities which require five percent or more of an individual's time should be recorded in activity analysis (Sharman, 1994) was applied when identifying micro activities.

Sharman (1994) state that people who perform tasks (individual members of personnel) generally need not to be interviewed directly because their supervisors or managers usually have an adequate understanding of activities performed by the people for whom they are responsible. However, in order to validate the data gathered at the interview stage, activity analysis grids were completed by a representation of staff from each department.

Having completed an activity analysis for every individual in the organisation, the costs of the micro activities were combined into macro activities, using the criteria established by Turney and Stratton (1992). At this stage, lists of costed macro activities and activity drivers were distributed to the managers who had been interviewed previously. The managers were asked to confirm the correctness of both the activity driver and activity information.

Following agreement with management on which activities were significant and those which could be aggregated i.e. activities within the same function with the same cost

driver, consideration was given to the identification of resource drivers. These were established in consultation with management and the financial controller. Where possible, resources (costs) were directly assigned to activities. Where a resource supported several activities, resource usage was assigned to those activities using an appropriate resource driver as the basis for assignment.

3.6.3 Step Three: Revenue Analysis

Having reviewed the information generated by the front office and accounting systems of the organisation in Step One, it was established that it would be necessary to estimate the revenues associated with each customer group. The specific objective was to estimate the average spend per person, per night, on hotel services, by each customer group. The data available in the organisation, which constituted the raw data for the study, consisted of guest bills detailing the spend per bill on various hotel services namely accommodation, food and drink, room hire and other, including telephone and laundry services.

Due to the population size i.e. approximately 20,000 guest bills, it was decided to select a random sample to estimate the quantities of interest. Due to the seasonal variation in customer type and spend and the manner in which the bills were filed, the sampling selection procedure chosen was systematic sampling.

A sample, obtained by randomly selecting one element from the first k elements in the frame and every k th element thereafter, is called a 1-in- k systematic sample. In the application of this methodology, $k = 10$ was employed resulting in a sample size of 1,950. The formulae available in the literature to calculate sample size could not be utilised because the sub-population variances were unknown i.e. the variance of spend in customer groups.

Using Microsoft Excel, the spreadsheet program, a table was set up to record the relevant details on each bill sampled. Information recorded included

- date of arrival
- date of departure
- number of guests
- accommodation rate
- breakdown of guest spend on accommodation, food, drink, other and room hire.

Using this data file, point estimates were calculated for average spend per customer group on accommodation, food, bar and other, using Eq. (1) (Figure 8).

In order to place a bound on the error of estimation, the variance was estimated using Eq. (2) and the bound on the error of estimation is given by Eq. (3). The ninety-five percent confidence interval for the point estimate of the mean spend is then of the form:

$$\bar{y}_{sy} \pm 2\sqrt{\text{var}(\bar{y}_{sy})}$$

The bound on the error of estimation is a quantifiable expression of the confidence in the accuracy of any point estimate. Without such a bound the point estimate of average spend would be meaningless.

$$\mu = \bar{y}_{sy} = \frac{\sum_{i=1}^n y_i}{n} \quad \text{.....Eq. (1)}$$

$$\text{Var}(\bar{y}_{sy}) = \frac{s^2}{n} \left(\frac{N-n}{N} \right) \quad \text{.....Eq. (2)}$$

$$2\sqrt{\text{Var}(\bar{y}_{sy})} = 2\sqrt{\frac{s^2}{n} \left(\frac{N-n}{N} \right)} \quad \text{.....Eq. (3)}$$

$$s^2 = \frac{\sum_{i=1}^n (y_i - \bar{y})^2}{n - 1} \quad \text{.....Eq. (4)}$$

- Where:
- μ = Estimate of the population mean
 - \bar{y}_{sy} = Sample mean of a systematic sample
 - y_i = Spend per night by *i*th customer
 - N = Population size
 - n = Sample size
 - $\text{Var}(\bar{y}_{sy})$ = Variance of the sample mean of a systematic sample
 - s^2 = Sample variance

Figure 8 - Statistical Formulae used in Revenue Analysis (Source: Scheaffer et al. (1990, p209))

3.6.4 Step Four: System Design

Although off the shelf software including *Easy ABC* (ABC Technologies), *Activity Analyser* (Lead Software), and *HyperABC* (Armstrong Laing) were assessed, it was decided to develop ProEno, a computerised system, using the spreadsheet software already available in the organisation (*Lotus1-2-3: Ver. 2.2*). Several factors contributed to this decision. Firstly, investment costs for off-the-shelf software are high, and it would be difficult to justify such a large investment for a medium-sized property. Secondly, the author wanted to assess whether the spreadsheet software readily available in most organisations, could be used in the implementation of CPA in place of specific ABC software packages.

Hence, the objective of this step was to draft on paper the basic design or structure of ProEno. At this point, it had to be decided whether it would be integrated into the existing accounting/management information systems or stand alone as a separate system, as this decision would have considerable design implications. In consultation with management, it was decided to operate ProEno as a stand alone system - principally to ensure the integrity of the data in their existing accounting system. In addition, it was found that the accounting system in use at the Site was not supportive of the export of data to a spreadsheet in a format which would facilitate the application of CPA.

The primary consideration at the system design stage was to choose a structure or layout for the display of information that would facilitate access to the information by users. For this purpose, the spreadsheet was divided up into four key areas. They are as follows:

- (a) Data-Entry
- (b) Activity Costs
- (c) Customer Groups
- (d) Profit Profile

(a) Data-Entry

In this area of the spreadsheet initial data would be recorded including:

- Cost data as per general ledger headings
- Revenue data by customer group as per systematic sample
- Operating statistics: bednights and average length of stay by customer group
- Activity analysis data: proportion of time spent by personnel performing activities
- Resource and activity driver data

(b) Activity Costs

This section on the spreadsheet would display all the activities performed in the organisation and the relevant costs assigned to each activity using an appropriate resource driver. The costs generated by each activity would be displayed in both percentage and monetary terms, this feature being used in order to facilitate a comparison of costs across activities.

(c) Customer Groups

This area would be divided into two sections: costs by customer group and revenues by same. The first section would display the costs (in percentage and monetary terms) associated with each customer group, resulting from the distribution of activity costs to customer groups using activity drivers as the basis of assignment.

The second area would display the revenues by customer group, in monetary and percentage terms - revenue figures being adjusted to exclude VAT and service charge.

(d) Profit Profile

In this area of the spreadsheet the cost and revenue data contained in the Customer Groups area would be consolidated to reveal profit by customer group (in monetary and percentage terms).

3.6.5 Step Five: Construction

This step consisted of the construction of ProEno on a spreadsheet. All the areas identified at the design stage (see Step Four) were set up on the spreadsheet, and formulae were developed in order to create links between each of the four areas. These formulae were required to link the following:

- the cost and resource driver data fields in Data-Entry area to the activity fields in the Activity Cost area in order to calculate activity costs;
- the activity driver fields in the Data-Entry area, and the activity fields in the Activity Cost area, to the customer cost fields in the Customer Group area to calculate costs by customer group;
- the revenue fields in the Data-Entry area to the revenue fields in the Customer Group area to calculate revenues by customer group;
- the revenue and cost fields in the Customer Group area to the Profit Profile area to calculate profit by customer group.

These formula links are illustrated in Figure 9.

It is important to note that at this stage the spreadsheet had no figures inputted - it was solely a template.

3.6.6 Step Six: System Automation

The objective of automating the system was to ensure user-friendliness. This was achieved through the use of macros. Macros are best described as the instructions that are given to the computer in order to automatically execute commands (Campbell, 1987).

In the case of ProEno, macros were developed in order to set up a menu system that would guide the user from one area of the spreadsheet to another, and allow them to execute certain commands within the system, such as printing tables from the spreadsheet, saving and exiting from the system.

The menu format comprised of a main menu and various sub-menus. The main menu options allow the user to access any of the four key areas on the spreadsheet: data-entry, activity costs, customer groups, and profit profile (see Figure 10).

Under the Data-Entry option, a menu and various submenus were created (see Figure 11). All the data to be processed through the system is entered at this point including revenue, cost, operating statistics, activity analysis and driver data. This area of the spreadsheet was configured in such a way that if the user enters any of these data-entry areas, a set of instructions informing the user as to which figures may be altered will appear.

It may be noted that only in this area of the spreadsheet will the user be able to input or alter data. The figures on all other areas will be automatically updated by the formulae connecting the data-entry area to each of the areas. The objective was that the user would be able to view the data in those other areas but would not be able to alter it.

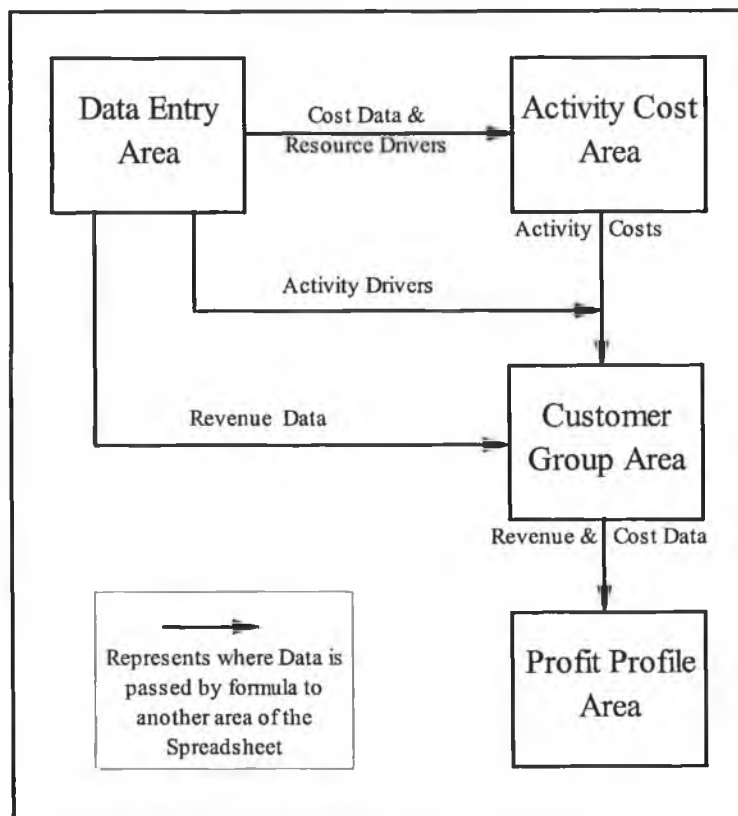


Figure 9 - Illustration of Information Linked by Formula in ProEno

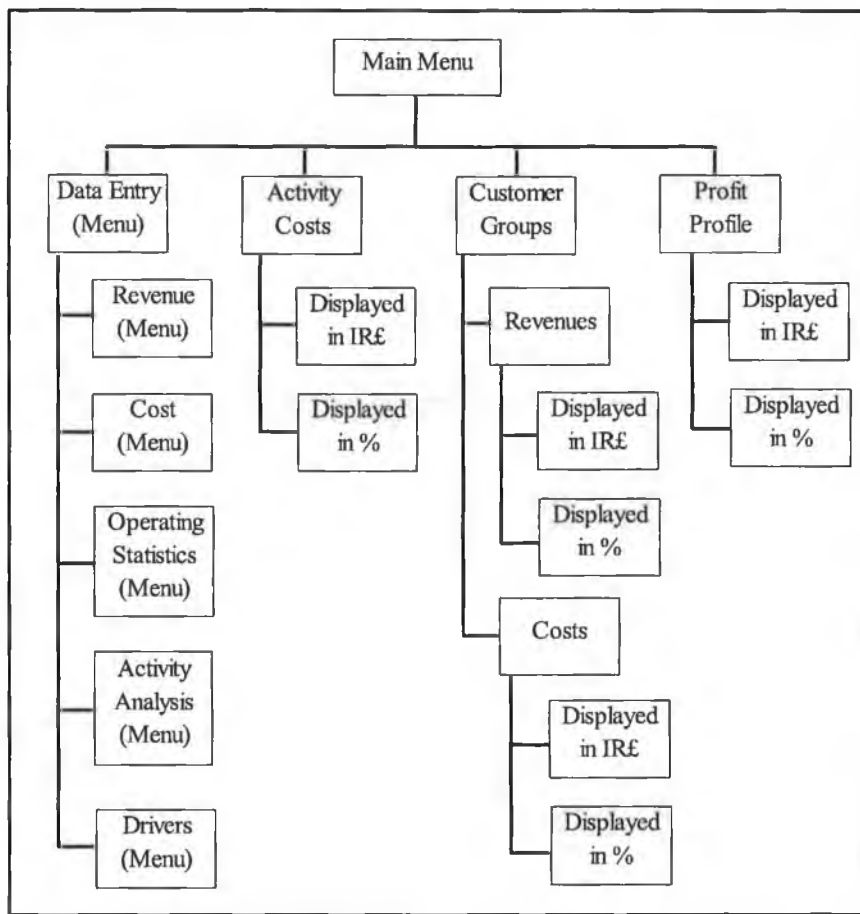


Figure 10 - Main Menu Tree of the CPA System ProEno

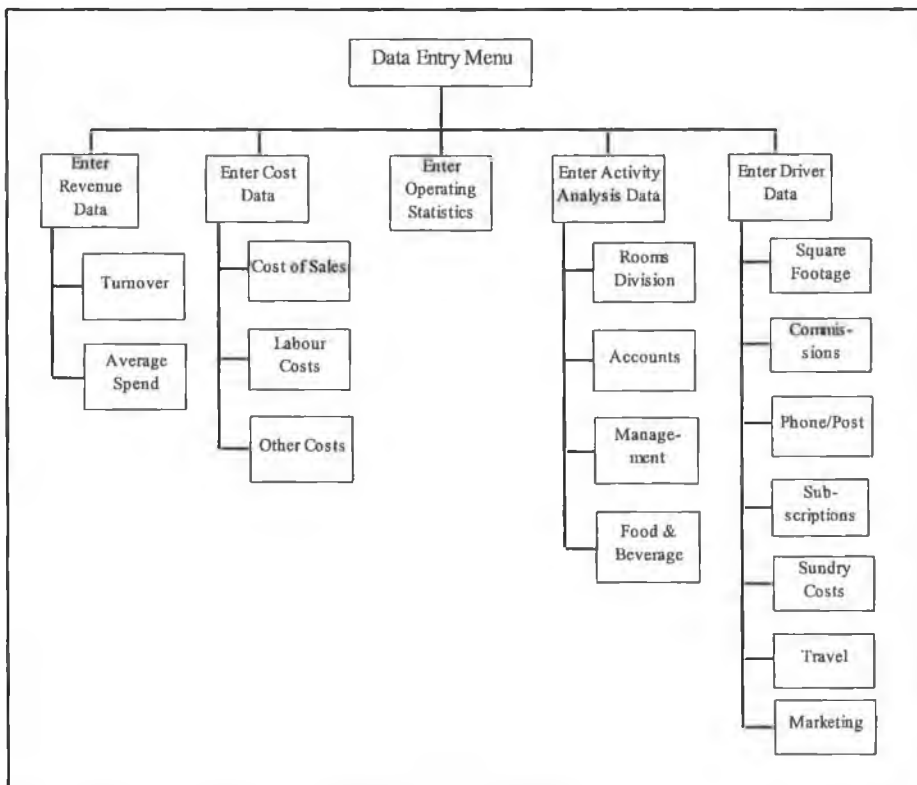


Figure 11 - Data Entry Menu Tree of the CPA System ProEno

3.6.7 Step Seven: Data Input

The revenue/cost data and operating statistics identified in Steps One and Three were inputted in the data-entry area. The Step Two activity analysis and driver information was also recorded in this area.

3.6.8 Step Eight: Output Results

The relevant formulae linking the initial data-entry area to all other areas in the spreadsheet automatically enabled the generation of reports, detailing the following:

- Activity Costs
- Costs by Customer Group
- Revenues by Customer Group
- Profit by Customer Group

3.6.9 Step Nine: Evaluate Results

When the results/final reports were generated by the system, a meeting was held at the Site, the objective of which was to discuss and evaluate the results. Attendees included the managing director of the holding company, a member of corporate management, the financial controller for the group and the general manager at the Site. This meeting comprised of three stages.

The first stage consisted of the distribution of a form, a copy of which is contained in Appendix C, on which the attendees were required to estimate the percentage contribution of each customer group to overall revenues and profit. The attendees were given a package consisting of all accounting and operational information readily available from their own information system in order to assist in this exercise. Having individually completed the form, the attendees were required to discuss their estimates with each other and arrive at one set of revenue and profit figures that would represent a collective view of the behaviour of revenues and profit by customer group.

The next stage of the meeting consisted of three steps. The first step involved the author's explanation of the conceptual design of the system. This was considered necessary because of the time that had elapsed since the pre-implementation seminar. The second step included a discussion of the results generated by ProEno, with comparisons being made with attendees' estimates of revenues and profit generated by customer groups. The third step included a demonstration of how to use the version of ProEno developed in Lotus 1-2-3.

The final stage of the meeting entailed the evaluation of the system by attendees. This was conducted using a combination of techniques - questionnaire and group discussion.

Each attendee was required to complete a questionnaire (Appendix C), detailing their evaluation of the system in terms of the

- degree of confidence in the methodology used in the generation of results by ProEno
- degree of confidence in the results obtained from ProEno
- willingness to base customer mix decisions on those results
- future application of the results in customer mix decisions, including marketing, pricing, costing, capital investment and capacity allocation decisions
- convenience and ease of use of ProEno
- issue of maintaining ProEno.

This was followed by an open discussion among the author and attendees, the objective of which was to review the responses obtained and address any issues resulting from the completion of the questionnaire.

3.6.10 Step Ten: System Review

The objective of the system review is to ensure that ProEno is maintained and updated, in order to continue to produce useful and timely customer-related information.

The review comprises of two elements: data input and the review of activity and driver data.

Data Input

When updated information is required, it will be necessary to manually enter the cost, revenue and operating statistics from the organisations accounting/information systems in the data entry area in ProEno. This is due to the fact that the customer profitability system is operating independently of existing systems at the Site.

Review of Activity and Driver Data

With respect to the updating of activity and driver data, the decision regarding the frequency of the update should reflect the dynamic nature of the department under review. If management feels that a particular department is subject to much change in terms of type and levels of activities performed, the activity analysis in relation to activities in that department will have to be regularly updated, e.g. quarterly. In the departments in which the status of activities is less changeable, activity analysis updates will be done less frequently e.g. on a yearly basis.

4. Results

4.1 Introduction

The results of the implementation of ProEno at the Site are presented in the following order:

- Site assessment
- Activity and driver analysis
- Revenue analysis
- Output results
- Evaluation of results

4.2 Results of Site Assessment

4.2.1 Description of Operations

The organisational structure of the Site is illustrated in Figure 12. As the Site is one of a group of hotel properties held by the holding company, the General Manager is directly responsible to the Managing Director of the company, and heads a management team of eight. Three departmental managers are responsible for the operation of the accommodation department, front office and reservations. The night manager's responsibilities include, processing the night audit and general management of the Site during the hours between 11pm and 7am. Two duty managers are responsible for the general management of the Site, with specific responsibilities in the food and beverage areas. The deputy manager has responsibility for all areas of operation and management of personnel, including all departmental and maintenance personnel, with the exception of accounts personnel who report directly to the financial officer.

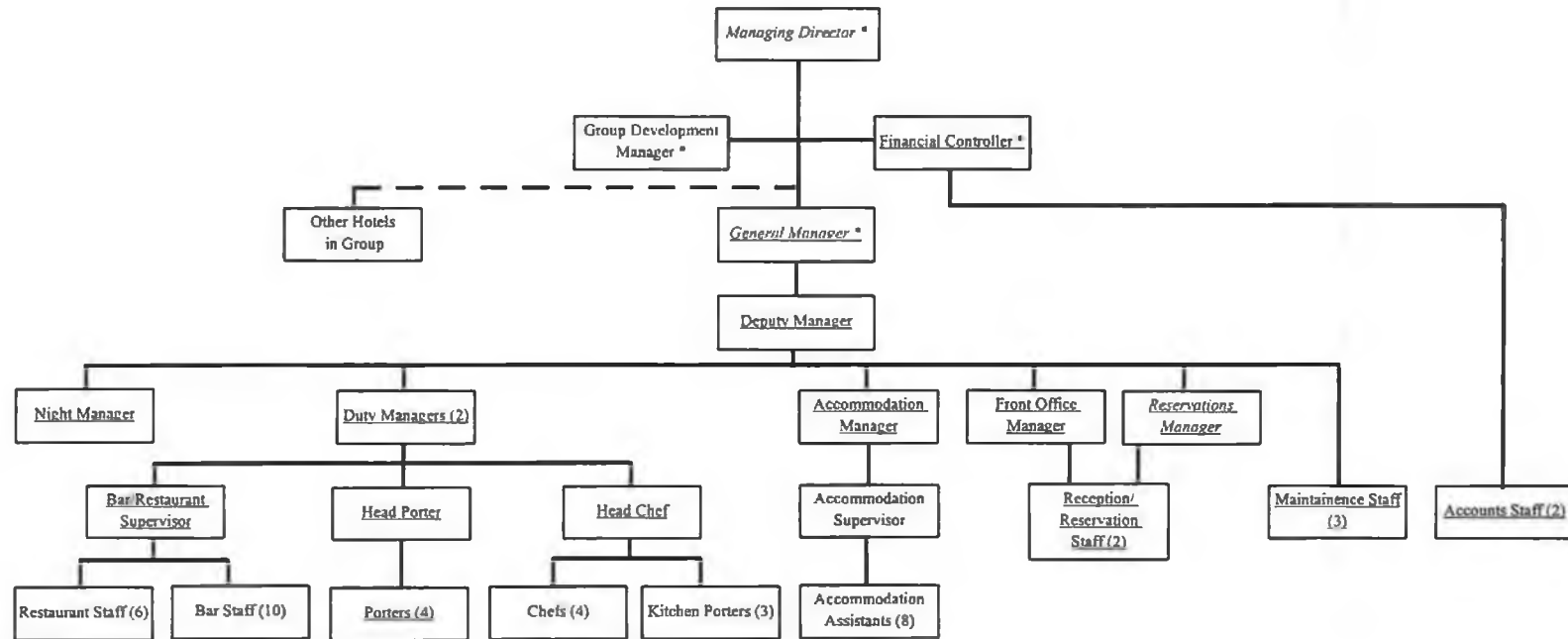
The facilities offered at the site include:

Accommodation - Three room types (single, double/twin and triple rooms)

Food and beverage facilities - Restaurant - capacity 50 people

Bar - capacity 300 people

Meeting/conference facility - Meeting Room capacity 40-45 people (theatre style)



Notes :

- * indicates participants in the Pre-implementation Seminar and Final Evaluation
- italics* indicates members of staff at the site who were interviewed during the Site Assessment
- underline indicates participants in the Activity Analysis and Driver Identification phase of the project
- where individuals participated in more than one of the above this is indicated with a combination of *italics*, underline and * as appropriate

Figure 12 - Organisational Structure of the Site, and its relationship to the Corporate Structure

4.2.2 Customer Groupings in use at the Site

There are fifty one rate categories identified in the organisation's front office system. For the purpose of management accounting, relevant categories are combined in order to form nine key customer groups which are presented in Table 1.

Customer Groups	Description
UK Business	Corporate guests from the UK (excluding Northern Ireland)
Commercial	All other corporate guests
Individual Traveller (I.T.)	Individual guests using vouchers issued by Tour Operators
Bands	Members of touring bands/music groups
Weekend	Guests availing of a weekend package (includes a two-night stay option: Fri./Sat. or Sat./ Sun.)
Own Package	Guests availing of hotel promotional packages (minimum two-night stay, includes meals)
Group	Tour group guests (contracted rates with tour operators)
Concession	Guests availing of discounted rates offered at the discretion of mgmt. (incl. rates available to employees of the group)
Retail	All other guests (includes rack rate guests)

Table 1- Customer Groups as Defined at the Site

Retail rates are maintained all year round. For the other eight customer groups, rate bands are established, one for the peak season and another for the off-peak season. For the purpose of establishing rate bands, the organisation defines the peak season as the period from May 1st to September 30th, and the off-peak season is from October 1st to April 30th.

4.2.3 Information Generated for Decision-Making

As it was decided by management to analyse the profitability of customer groups for the period 1st November 1994 to 31st October 1995, all financial data presented in this chapter relates to that specific period under review.

4.2.3.1 Revenue and Cost Data

The management accounting system at the Site records costs according to cost centres, which include both operating departments and overhead items. Revenues are recorded by operating department. Table 2 outlines the management accounting information for the year ended 31st October 1995, detailing the revenues earned and costs incurred for the accounting period and used by management to support decision making.

	Rooms	Food	Bar	Room Hire	Other	Total
Turnover	1063271	209338	391710	5402	52633	1722354
Less						
Operating Department Expenses						
Cost of Sales	0	90661	190980	0	22674	304315
Labour Costs	225956	192406	132650	0	0	551012
Direct Costs	104654	20009	14398	0	0	139061
Contribution	732661	(93738)	53682	5402	29959	727966
Less						
Overhead Department Expenses						
Administration/ General						253808
Establishment						290852
Advertising/ Promotions						33148
Earnings before interest and tax						150158

Table 2 - Profit and Loss Account for the year ended 31st October 1995 (IR£)

4.2.3.2 Breakdown of Costs in the Management Accounts

The following is a detailed breakdown of the direct costs, labour, and overhead department expenses as per the accounts at the site .

(a) Direct Costs

Direct costs are recorded by operating departments: rooms, food and bar (see Table 3). The figure for the phone/post (-IR£9) as recorded in the management accounts was explained by management as an adjustment to a figure incorrectly charged in the accounts.

	Rooms	Food	Bar
Laundry	28866	6764	2293
Operating Supplies	7540	2881	938
Cleaning	4153	3820	534
Uniform	490	112	146
Gas	0	2446	0
Phone/Post	-9	0	0
Stationery	3080	1623	714
Entertainment	4770	0	1495
Commissions	32598	0	0
Car Park	8909	0	0
Crockery	0	2363	818
Sundry	14257	0	0
Security	0	0	7460
<i>Total</i>	<i>104654</i>	<i>20009</i>	<i>14398</i>

Table 3 -Allocation of Direct Costs to Operating Departments (IR£)

(b) Overhead Costs

Three overhead cost centres are identified in the financial accounts: administration/general, establishment, and advertising/promotions. The costs included in these cost categories are detailed in Table 4. The indirect labour cost relates to management, accounts department and maintenance personnel (breakdown as per Table 5).

(c) Labour Costs

The allocation of labour cost is outlined in Table 5. Included in the labour analysis is allocation of add-on costs to the operating departments and overhead categories. Add-on is the term used to describe the cost of staff food and is calculated on the basis of £10 food cost per member of personnel per week.

4.2.3.3 Operating Statistics

In addition to financial data, the management accounting/information system at the Site also produces non-financial data:

(a) Occupancy/Average Rate Data

The information system at the Site generates data relating to room occupancy percentage, average daily room rate and yield per available room. Table 6 contains information corresponding to the period under review.

	Administration/ General	Establishment	Advertising/ Promotions
Labour (Basic & Add-on)	133353	32645	0
Subscriptions	4198	0	0
Bad Debt Provision	965	0	0
Phone/Post	16890	0	0
Stationery	7096	0	0
Commissions	20537	0	0
Equip. Lease	6265	0	0
Travel/Motor	11715	0	0
Bank Charges	9053	0	0
Pensions	31720	0	0
Staff Ad/ Training	2337	0	0
Sundry	3895	0	0
Security	787	0	0
Electricity	0	23787	0
Heating	0	13211	0
Insurance Premium	0	53948	0
Insurance Excess	0	39197	0
Rates	0	71076	0
Maintenance	0	56978	0
Uniforms	4997	10	0
Adv./Proms	0	0	33148
Total	253808	290852	33148

Table 4 - Overhead Cost Categories (IR£)

Labour Category	Number of Employees	Rooms	Food	Bar	Admin.	Estab.	Total
Reception	4	49174	0	0	0	0	49174
Housekeeping	10	91640	0	0	0	0	91640
Porters	5	73590	0	0	0	0	73590
Restaurant	7	0	69850	0	0	0	69850
Kitchen	8	0	113308	0	0	0	113308
Bar	10	0	0	119846	0	0	119846
Management	5	0	0	7822	100340	0	108162
Accounting	2	0	0	0	28922	0	28922
Maintenance	3	0	0	0	0	31224	31224
Add-on		11552	9248	4982	4091	1421	31294
Total	54	225956	192406	132650	133353	32645	717010

Table 5 - Labour Cost Analysis (IR£)

Room Occupancy	71.28 %
Revenue per Available Room	£47.52

Table 6 - Occupancy and Room Rate Data

(b) Rooms and Bednights by Customer Group

The specific information relating to the number of rooms occupied and bednights by customer group is accessed from the daily night audit report which is outputted from the front office system. Table 7 lists the information available in the management accounts relating to customer groups for the year ended 31st October 1995.

Customer Group	No. Rooms	No. Bednights	% Bednights
Retail	3,386	5,288	15.21%
UK Business	1,348	1,991	5.73%
Commercial	5,572	7,092	20.40%
I.T.	2,425	4,267	12.27%
Bands	567	829	2.38%
Weekends	3,602	6,486	18.65%
Own Package	2,804	4,540	13.06%
Tour Group	1,439	2,540	7.31%
Concession	1,232	1,735	4.99%
Total	22,375	34,768	100%

Table 7 - Rooms and Bednights by Customer Group

4.2.4 Management Approach to Decision-Making

Through interviews with management, three key types of customer-related decisions were identified. These included marketing, pricing and capacity allocation decisions. In the case of each decision type, management considered various sources of information when making decisions, outlined as follows:

Marketing Decisions: Marketing decisions, including decisions regarding the allocation of the annual marketing/advertising budget, are based on reports generated both internally and by external organisations. Internally generated reports comprise of comparisons between the number of rooms forecast for key customer groups and forward bookings by customer group i.e. future rooms booked. External reports considered include Bord Fáilte publications on trends in customer demand both by nationality and customer type. Other factors, such as upcoming events and political stability are also considered when making marketing decisions. In addition,

management indicated that intuition and experience of the hotel industry have a role in decision-making.

Pricing Decisions: Management reported that pricing decisions are essentially market-driven. For example, as the demand for type/standard of weekend accommodation offered by the organisation has increased significantly in recent years, there has been a corresponding annual increase in the rates charged for weekend packages. In contrast, management have maintained corporate accommodation rates over the last two years as they feel that the type of guest targeted in this customer group would not be willing to bear a rate increase.

Capacity Allocation Decisions: In order to make capacity allocation decisions, management rely on information from various sources including internally generated information (trends in bednights by customer group), general industry reports, and other factors such as the time of the year and upcoming events.

Currently, management have a policy in relation to tour group bookings - only forty percent of total rooms available per night during peak periods may be occupied by tour group guests. This excludes weekend periods where no capacity is allocated to group business. The hotel also allocates a certain number of rooms per night to booking agents such as Utell, who then sell those room on behalf of the hotel to the retail customer group.

With regard to the issue of overbooking, the hotel does not have a formal overbooking policy. The number of rooms overbooked on any night will depend on management's experience and judgement in relation to the number of no-shows and cancellations expected.

4.2.5 Revision of Customer Groupings

The final element of the Site assessment consisted of a review of existing customer groupings. For the purpose of assessing customer profitability, it was decided in consultation with management, to revise the customer groupings already established for

decision-making to include three additional customer groupings, two non-rooms related, *Food* and *Bar*, and one rooms-related, *Conference*. To date, the *Conference* customer group has been amalgamated with *Commercial* customers in terms of recording occupied rooms and bednight data. These two customer groups have been identified as two distinct customer categories for customer profitability analysis. The results of the review are presented in Table 8.

Customer Group	No. Rooms	No. Bednights	% Bednights
Rooms Related			
Retail	3,386	5,288	15.21%
UK Business	1,348	1,991	5.73%
Commercial	5,499	7,004	20.15%
I.T.	2,425	4,267	12.27%
Bands	567	829	2.38%
Weekends	3,602	6,486	18.65%
Own Package	2,804	4,540	13.06%
Tour Group	1,439	2,540	7.31%
Conference	73	88	0.25%
Concession	1,232	1,735	4.99%
Non-Rooms Related			
Food	N/A	N/A	N/A
Bar	N/A	N/A	N/A
Total	22,375	34,768	100%

Table 8 - Revised Customer Groupings & Operating Statistics

4.3 Results of Activity and Driver Analysis

4.3.1 Identification of Macro Activities

All micro activities performed as part of the production/service process in the organisation were recorded and then aggregated to form nine macro activities. The results of this analysis are presented in Table 9.

4.3.2 Distribution of Personnel Time by Activity

A summary of the results of the activity analysis undertaken in each department in the organisation, detailing the proportion of personnel time consumed by macro activities, is presented in Table 10.

	Macro Activities
Rooms Related	Housekeeping Checking guests in/out Reservations Meeting Room Set -up/Administration Switchboard Operation
Food Related	Food Preparation/ Service
Bar Related	Beverage Preparation/ Service
Marketing	Advertising and Promoting the Property
Administrative	General Administrative Duties

Table 9 - Macro activities taking place in the organisation

Personnel Involved	Activity Name									
	House Keeping	Check in/ out	Reservations	Meeting Room Administration	Switchboard Operation	Food Production/ Service	Beverage Production/ Service	Marketing	General Administration	Total
	%	%	%	%	%	%	%	%	%	%
Rooms										
Reception staff	-	63.00	26.12	2.00	7.00	-	-	1.88	-	100.00
Houskeeping staff	96.00	-	-	4.00	-	-	-	-	-	100.00
Porters	5.00	95.00	-	-	-	-	-	-	-	100.00
Food										
Rcstaurant staff	-	-	-	-	-	100.00	-	-	-	100.00
Kitchen staff	-	-	-	-	-	100.00	-	-	-	100.00
Bar										
Bar staff	-	-	-	-	-	-	100.00	-	-	100.00
Administration										
Management	10.50	26.00	6.50	-	-	10.00	36.50	-	10.50	100.00
Accounts staff	16.13	38.70	1.12	2.12	1.20	15.94	18.99	3.21	2.61	100.00
Establishment										
Maintenance staff	74.00	3.00	1.00	1.00	1.00	7.00	8.00	1.00	4.00	100.00

Table 10 - Results of Activity Analysis

4.3.2.1 Management Activity Analysis

As there is an emphasis on a 'hands-on' management style in the organisation, this had to be adequately represented in the activity analysis. Table 11 gives a detailed breakdown of the assignment of management time to macro activities.

4.3.2.2 Accounts Department Activity Analysis

There are three activities performed by personnel in the accounts department - debtor control/management, creditor control/management and payroll administration, with their time being equally distributed across all three activities. These three micro activities support the macro activities performed in the organisation and, as such, the amount of time spent by accounts personnel performing them can be internally assigned to relevant macro activities (see Table 12).

Debtor Management/Control

This activity is concerned with the management and collection of debts that are incurred at payment points in the organisation, primarily at the front desk on check-out and in the food service areas. Therefore, the amount of time spent by accounts personnel on debtor management/control activity has been assigned to the Check-in/out and Food Service/Preparation activities in the proportion that credit sales are generated by these macro activities.

Creditor Control

The amount of personnel time spent on creditor control was assigned to macro activities using the proportion of credit purchases generated by each activity as the resource driver. Labour costs were excluded in this assignment, as there are no credit terms associated with this cost.

Payroll Distribution

The time spent by accounts personnel on payroll administration was assigned to activities based on the proportion of the total number of employees supporting each activity.

Activity Name Personnel Involved	House Keeping	Check in/ out	Reservations	Meeting Room Administration	Switchboard Operation	Food Production/ Service	Beverage Production/ Service	Marketing	General Administration	Total
	%	%	%	%	%	%	%	%	%	%
General manager	20.00	20.00	10.00	-	-	-	30.00	-	20.00	100.00
Deputy general mgr.	20.00	10.00	10.00	-	-	-	40.00	-	20.00	100.00
Duty manager (x2)	12.50	50.00	12.50	-	-	50.00	75.00	-	-	200.00
Night manager	-	50.00	-	-	-	-	37.50	-	12.50	100.00
Overall % Distribution	10.50	26.00	6.50	-	-	10.00	36.50	-	10.50	100.00

Table 11 - Management Activity Analysis Grid

Supported Activity Activity Name	Activity Driver	House Keeping	Check in/ out	Reservations	Meeting Room Administration	Switchboard Operation	Food Production/ Service	Beverage Production/ Service	Marketing	General Administration	Total
		%	%	%	%	%	%	%	%	%	%
Debtor Control	% Cr. Sales	-	95.00	-	5.00	-	-	-	-	-	100.00
Creditor Control	% Cr. Purchases	24.18	4.44	0.66	0.38	3.00	17.60	33.76	9.41	6.57	100.00
Payroll	No. of employees	24.22	16.65	2.69	0.98	0.60	30.21	23.20	0.21	1.24	100.00
Overall % Distribution		16.13	38.70	1.12	2.12	1.20	15.94	18.99	3.21	2.60	100.00

Table 12 - Accounts Personnel Activity Analysis Grid

4.3.3 Identification of Resource Drivers

Through discussion with management the resource drivers to be used in the assignment of resource costs to activities were identified. These are illustrated in Table 13.

4.3.3.1 Description of Resource Drivers

(1) Direct Usage

Direct Usage is the resource driver applied where resource costs can be traced directly to activities. The following resources were assigned to activities using direct usage as the resource driver.

(a) Cost of Sales

Information relating to the cost of sales was sourced directly from the general ledger totals, and assigned to relevant activities.

(b) Operating Costs

Costs included in this category include all direct costs incurred through the performance of activities: laundry, operating supplies, cleaning, stationery, entertainment, crockery, gas and advertising/promotion costs. As the general ledger summarises the total cost figure for each operating cost category, these costs were assigned to activities based on cost data sourced directly from individual supplier invoices.

(c) Sundry costs: Bar Licence, Flowers/Displays

The figure for sundry costs in the end of year accounts represents an arbitrary allocation of sundry costs to the rooms division and administration.

During discussions with management the composition of this general cost category was examined. The bar licence and flowers/display costs were identified as costs within this category and were directly assigned to the relevant activities based on invoice totals.

Activity Resource	Resource Driver	House Keeping	Check in/ out	Reservations	Meeting Room Administration	Switchboard Operation	Food Production/ Service	Beverage Production/ Service	Marketing	General Administration
Cost of Sales		%	%	%	%	%	%	%	%	%
<i>Food</i>	Direct Usage	-	-	-	-	-	100.0	-	-	-
<i>Bar</i>	Direct Usage	-	-	-	-	-	-	100.0	-	-
<i>Phone</i>	Direct Usage	-	-	-	-	100.0	-	-	-	-
Laundry	Direct Usage	76.1	-	-	-	-	17.8	6.0	-	-
Operating Supplies	Direct Usage	66.4	-	-	-	-	25.4	8.3	-	-
Cleaning	Direct Usage	48.8	-	-	-	-	44.9	6.3	-	-
Stationery	Direct Usage	-	24.6	-	-	-	13.0	5.7	-	56.7
Entertainment	Direct Usage	76.1	-	-	-	-	-	23.9	-	-
Crockery	Direct Usage	-	-	-	-	-	74.3	25.7	-	-
Gas	Direct Usage	-	-	-	-	-	100.0	-	-	-
Adv/Proms	Direct Usage	-	-	-	-	-	-	-	100.0	-
Labour Cost (Basic)										
<i>Reception staff</i>	Time	-	63.0	26.1	2.0	7.0	-	-	1.9	-
<i>Housekeeping staff</i>	Time	96.0	-	-	4.0	-	-	-	-	-
<i>Porters</i>	Time	5.0	95.0	-	-	-	-	-	-	-
<i>Restaurant staff</i>	Time	-	-	-	-	-	100.0	-	-	-
<i>Kitchen staff</i>	Time	-	-	-	-	-	100.0	-	-	-
<i>Bar staff</i>	Time	-	-	-	-	-	-	100.0	-	-
<i>Accounts staff</i>	Time	16.1	38.7	1.1	2.1	1.2	15.9	19.0	3.2	2.6
<i>Management</i>	Time	10.5	26.0	6.5	-	-	10.0	36.5	-	10.5
<i>Maintenance staff</i>	Sq. Footage	74.0	3.0	1.0	1.0	1.0	7.0	8.0	1.0	4.0
Labour (add-on)	Total Employees	23.9	17.5	2.6	1.0	0.6	29.7	23.0	0.3	1.3
Staff ad/trng	Total Employees	23.9	17.5	2.6	1.0	0.6	29.7	23.0	0.3	1.3
Uniform	Uniformed Employees	24.2	16.7	2.7	1.0	0.6	30.2	23.2	0.2	1.2
Travel/ motor	Authorised Employees	5.8	14.4	3.6	-	-	50.0	20.3	-	5.8
Pensions	% Payroll	19.1	20.6	3.0	0.8	0.6	29.3	24.4	0.3	2.0
Phone/Post	% Calls	1.0	11.0	8.0	1.0	-	1.0	1.0	20.0	57.0
Commissions										
<i>Credit Card</i>	% Credit Sales	-	95.0	-	-	-	5.0	-	-	-
<i>Travel Agent</i>	% Revenue	-	-	-	-	-	-	-	100.0	-
Sundry										
<i>Bar Licence</i>	Direct Usage	-	-	-	-	-	-	100.0	-	-
<i>Flowers/ Displays</i>	Direct Usage	-	100.0	-	-	-	-	-	-	-
<i>Other</i>	Sq. Footage	74.0	3.0	1.0	1.0	1.0	7.0	8.0	1.0	4.0
Security										
<i>Bar</i>	Direct Usage	-	-	-	-	-	-	100.0	-	-
<i>Admin.</i>	Admin. Charges	-	-	-	-	-	-	-	-	100.0
Subscriptions										
<i>Marketing</i>	Direct Usage	-	-	-	-	-	-	-	100.0	-
<i>Administration</i>	Admin. Charges	-	-	-	-	-	-	-	-	100.0
Heating	Sq. Footage	74.0	3.0	1.0	1.0	1.0	7.0	8.0	1.0	4.0
Rates	Sq. Footage	74.0	3.0	1.0	1.0	1.0	7.0	8.0	1.0	4.0
Maintenance	Sq. Footage	74.0	3.0	1.0	1.0	1.0	7.0	8.0	1.0	4.0
Electricity	Sq. Footage (wghtd A)	64.0	3.0	1.0	1.0	1.0	17.0	8.0	1.0	4.0
Insurance Premium	Sq. Footage (wghtd B)	24.0	3.0	1.0	1.0	1.0	7.0	58.0	1.0	4.0
Insurance Excess	Sq. Footage (wghtd B)	24.0	3.0	1.0	1.0	1.0	7.0	58.0	1.0	4.0
Car Park	Admin. Charges	-	-	-	-	-	-	-	-	100.0
Bad Debt Provision	Admin. Charges	-	-	-	-	-	-	-	-	100.0
Equip. Lease	Admin. Charges	-	-	-	-	-	-	-	-	100.0
Bank Charges	Admin. Charges	-	-	-	-	-	-	-	-	100.0

Table 13 Assignment of Resource Costs to Activities using Resource Drivers (%)

(d) Security: Bar

From the general ledger total, the cost of bar security was directly assigned to the Beverage Production/Service activity.

(e) Subscriptions: Marketing

As the general ledger total for subscriptions was an aggregation of all subscription costs incurred by the organisation, it was necessary to identify the individual components of this cost category.

Through discussions with management it was found that a percentage of subscription costs was consumed by the marketing activity, including fees payable to Bord Fáilte and the inclusion of the site in the Irish Hotels Federation *Be Our Guest* Guide. The amount assigned to this activity was estimated by management.

(2) Time

Using Time as a resource driver, resource costs are assigned to activities based on the proportion of personnel time supporting each activity.

Labour Cost (Basic)

The basic wages cost for all personnel, excluding maintenance staff, was assigned to relevant activities using Time as a resource driver. This data was ascertained from the activity analysis grids completed by management and staff.

(3) Total Employees

The total number of employees performing each activity is used as the basis for assigning costs to relevant activities. The information utilised in the calculation of the number of personnel by activity was obtained from the activity analysis performed at the Site.

(a) Labour (add on)

As the Labour (add-on) cost associated with each individual member of staff is the same i.e. £10 per week, this cost was attributed to activities using Total Employees as the resource driver.

(b) Staff Advertising/Training

Staff Advertising/Training was attributed to activities using Total Employees as the resource driver for the following reasons.

- Informal staff training is regarded as an ongoing process within the organisation, thereby influencing all members of staff.
- The time factor associated with tracing advertising costs directly to specific categories of personnel would outweigh any benefits accruing from the precision of results.

(4) Uniformed Employees

The number of uniformed employees supporting activities is used in the assignment of costs to activities.

Uniform Costs

Uniformed Employees was used as the resource driver to assign uniform costs to activities. Driver data was obtained from the activity analyses performed in the organisation.

(5) Authorised Employees

Using Authorised Employees as a resource driver, resource costs are assigned to activities based on the number of employees given authorisation to generate those costs.

Travel/Motor Cost

This cost category included all costs incurred in transporting staff to and from work primarily at times when public transport was unavailable. Through discussions with management, those authorised to consume this resource cost included restaurant and kitchen staff, and management.

(6) % Payroll

Costs are assigned to activities based on the percentage of total payroll supporting those activities.

Pension Costs

Pension costs have been assigned to activities based on the percentage of payroll supporting each activity. This assignment was based on the fact that the majority of personnel are covered by the pension plan and contribution is made by the organisation using the same percentage point for all employees. Driver data was obtained from the basic labour cost data contained in the organisation's accounting system.

(7) % Calls

Costs are assigned to activities based on the percentage of telephone calls generated by each activity.

Phone/Post

This cost category included expenditure on telephone calls and postage. Through discussions with management, management advised that the dominant cost in this category was telephone charges, with postage charges representing a nominal portion of the total. Therefore, % Calls was chosen as the most appropriate resource driver.

(8) % Credit Card Sales

Using % Credit Card Sales as the resource driver, resource costs are assigned to relevant activities based on the percentage of credit card sales that are generated by those activities.

Commissions: Credit Card

Total commission payable comprised of credit card and travel agent commissions. The figure for total commissions payable on the end of year accounts is arbitrarily allocated between the rooms division and administration. In order to establish an estimate of the total credit card commission payable during the period under review, the accounts staff monitored the level of credit card sales generated over the six month period from 1st December 1995 to 31st May 1996. The results of this study by the accounts staff were used as an estimate of the proportion of credit card sales for the period under review 1st November 1994 to 31st October 1995. Commission was calculated on the total estimate for the year at 4%.

Credit card commission was then assigned to relevant activities based on the percentage credit card sales generated by those activities.

(9) % Revenue (T.A.)

Resource costs are assigned to activities based on the percentage of revenue generated by activities which is attributable to Travel Agents.

Commissions: Travel Agent

Through discussions with management, it was decided that the appropriate resource driver for assigning travel agent's commission to activities was % Revenue attributable to Travel Agents. This was based on the fact that all travel agent sales generated a standard commission charge of 10% on sales.

During data collection, it was discovered that the information system at the Site yielded no data relating to the volume of travel agent sales generated, thereby negating the use of % Revenue (T.A.) as the resource driver. However, as total commissions payable was comprised of only two components, credit card and travel agent commissions, by subtracting commission payable on credit card sales from total commissions payable, it was possible to deduce an estimate for total travel agent commission. This amount was assigned to the marketing activity on the basis that the travel agent is acting as a

distribution channel, selling the accommodation product to guests on behalf of the organisation.

(10) Square Footage

Costs are assigned to activities based on the amount of floor space (square footage) of the property occupied by those activities.

(a) Labour Cost (basic): Maintenance Staff

During completion of activity analysis grids, assignment of the basic labour cost for maintenance staff to activities using Time as a resource driver proved difficult. Due to the nature of their work, the amount of time spent by maintenance staff performing tasks could not be traced to specific activities in a retrospective study.

Through discussions with management, it was found that the most appropriate, alternative resource driver to use would be Square Footage, as there existed a close correlation between the amount of work performed by maintenance staff in support of activities and the square footage occupied by same.

(b) Sundry: Other

All sundry costs that were not readily identifiable or directly attributable to activities were assigned to activities using Square Footage as an interim resource driver. The time factor that would be associated with the investigation of the costs included in the Other category rendered it infeasible to analyse those costs at the time of the study. However, the composition of this category is currently under review by management.

(c) Heating, Rates and Maintenance Costs

Through discussion with management it was established that Square Footage was the appropriate resource driver to use in the assignment of Heating, Rates and Maintenance costs to activities.

(11) Square Footage (wghtd A)

Resource costs are assigned to activities based on the square footage occupied by individual activities, with a weighting being given to certain activities to reflect an increased usage of electricity.

Electricity Costs

Electricity costs were assigned to activities using Square Footage (Wghtd A) as the resource driver. The weightings used were estimated by management as each activity area in the organisation is not fitted with an individual electricity meter.

(12) Square Footage (wghtd B)

Resource costs are assigned to activities based on the square footage occupied by individual activities, with a weighting being given to certain activities to reflect the increased liability associated with those activities.

Insurance Costs: Premium/Excess

Both the insurance premium and excess costs were assigned to activities using Square Footage (Wghtd B) as the resource driver. Weighting has been given to the Beverage Production/Service activity to reflect the increased liability historically associated with this activity area.

(13) Administrative Charges

Administrative charges refers to all costs incurred to support the general administration of the organisation and as such, are assigned in total to the general administration activity. These costs include:

(a) *Security: Administration*

This cost is associated with the employment of security agency services for administrative purposes, including the cost of security firms for the movement of cash.

(b) Subscriptions: Administration

This cost category includes subscriptions for membership of trade and professional organisations including the Irish Business and Employers Confederation (IBEC), The Irish Hotel Federation (IHF) and the Irish Hotel and Catering Institute (IHCI) and, as such, is purely administrative in nature.

(c) Car Park

This cost category relates to parking fees based on a contract with a near-by commercial car-park.

(d) Bad debt Provision

This is a nominal cost established in accounting to provide for bad debts.

(e) Equipment Lease

Management have defined this cost as being a form of financing and regard it as an administration-related expense.

(f) Bank charges

Bank charges can be broken down into the following cost categories

- charges for handling guest revenue
- payroll distribution cost
- general administration charges.

While the first two charge categories are directly associated with the performance of various activities in the organisation, the bank statements issued to the organisation did not yield sufficient information to distinguish the exact composition of each of the three cost categories. It was decided by management that all bank charges would be assigned to the administration activity in the interim, pending investigation into the specific contribution of each individual cost category to bank charges.

4.3.4 Identification of Activity Drivers

Table 14 lists the activity drivers which were identified by management during the interview process. Management decided that the majority of activity costs, with the exception of those associated with the administration activity, were generated by customers and could be assigned to customer groups on that basis.

Activity	Activity Driver	Cost Object
Housekeeping	No. of bednights	Customer
Checking guests in/out	No. of stays	Customer
Reservations	No. of stays	Customer
Meeting Room Set -up/ Administration	No. of meetings	Customer
Switchboard Operation: <i>Costs of Calls</i> <i>Other</i>	% revenue generated No. of calls	Customer
Food Preparation/Service: <i>Food Cost of Sales</i> <i>Other</i>	% revenue generated No. of covers	Customer
Beverage Preparation/Service: <i>Beverage Cost of Sales</i> <i>Other</i>	% revenue generated No. of covers	Customer
Advertising and promoting the property: <i>Cost of advertising</i> <i>Other</i>	% estimate No. of guests	Customer
General Administrative duties	Non-attributable Administrative Charges	Business Sustaining

Table 14 - Identification of Activity Drivers

4.3.4.1 Description of Activity Drivers

(1) Number of Bednights

Number of Bednights is the activity driver used when the cost of an activity is driven by the number of bednights occupied by individual customer groups.

Housekeeping

The costs associated with the housekeeping activity are driven by the number of individual bednights occupied by guests. Therefore, Number of Bednights was chosen as the appropriate activity driver for the assignment of this activity cost to customer groups.

(2) Number of Stays

Number of Stays is the activity driver used when the cost of an activity is driven by the number of times a guest stays in the hotel.

Check in/out and Reservations

The costs associated with these activities are generated in direct proportion to the number of times a guest stays in the hotel. Number of Stays was chosen as an activity driver, as opposed to Number of Bednights, as a guest will only check in or out or make a reservation once per stay.

(3) Number of Meetings

Number of Meetings is the activity driver used when the cost of an activity is driven by the number of meetings/conferences held in the hotel.

Meeting Room - Set-up and Administration

The cost of this activity is driven by the number of meetings held in the hotel by individual customer groups. As there is only one particular customer group i.e. the *Conference* customer group, using the meeting room facilities at the Site, all costs associated with the meeting room set-up/administration activity could be directly assigned to the *Conference* customer group.

(4) % Revenue Generated

% Revenue Generated is the activity driver used when the cost of an activity is driven by the proportion of revenue generated by individual customer groups.

(a) *Switchboard Operation: Cost of sales (Calls)*

The hotel charges a multiple of the Telecom Eireann unit charge for telephone calls made by guests. As there is a direct correlation between the telephone revenues generated and the cost of calls per minute, % Telephone Revenue was identified as an appropriate activity driver for the assignment of cost of telephone calls to customer groups.

(b) *Food Preparation/Service: Food Cost of Sales*

While the food cost associated with individual food dishes can vary, hotel organisations endeavour to offer a range of menu items in order to ensure that an acceptable overall food cost per pound of sales revenue is achieved. On the basis that this practice is pursued at the Site i.e. that there is a standard average food cost of sales per pound of food sales revenue generated, % Food Revenue was identified as an appropriate activity driver for the assignment of food cost of sales to customer groups.

(c) *Beverage Preparation/Service: Beverage Cost of Sales*

As with food cost of sales, there is a standard average beverage cost of sales associated with every pound of beverage sales generated. For this reason, % Beverage Revenue was identified as an appropriate activity driver for the assignment of beverage cost of sales to customer groups.

(5) *Number of Calls*

Number of Calls is the activity driver used when the cost of an activity is driven by the number of telephone calls generated by individual customer groups.

Switchboard Operation: Other

Other refers to all costs associated with the Switchboard Operation activity, with the exception of the cost of calls. Other includes costs such as the labour cost associated with operating the switchboard which are driven specifically by the number of telephone calls processed. As such, Number of Calls was identified as the appropriate driver for these activity costs.

(6) Number of Covers

Number of Covers is the activity driver used when the cost of an activity is driven by the number of individual covers or guests served.

Food and Beverage Production/Service: Other

All costs generated by these two activities, with the exception of cost of sales, are driven by the number of covers served in the relevant food and beverage areas. For example, the labour cost, laundry and operating supply costs will all be consumed by these activities in direct proportion to the number of guests served. Therefore, Number of Covers was identified as the appropriate driver for these activity costs.

(7) % Estimate

Activity costs are assigned to customer groups on the basis of an estimate made by management.

Advertising and Promoting the Property: Cost of Advertising

Cost of Advertising refers to the direct cost associated with the use of media. Due to the nature of this form of advertising, it is not possible to identify the precise amount of money utilised to target specific customer groups. Therefore, management decided that the most appropriate basis by which to assign the cost of advertising to the relevant customer groups would be by use of an informed estimation by management, based on the markets being targeted in the marketing campaign.

(8) Number of Guests

Total Number of Guests is the activity driver used when the cost of an activity is driven by the total number of guests, including both room and non-rooms related customer groups.

Advertising and Promoting the Property: Other

Advertising and marketing activities extend beyond media advertising to include more intangible aspects such as staff-guest interaction, which will influence all guests availing of hotel services. As such, the Number of Guests in each individual customer

group was identified as the most appropriate activity driver in the assignment of these costs.

(9) Administrative Charges

Administrative charges refers to those cost that are not generated by or traceable to guests and therefore cannot be assigned to any customer group.

General Administration

The costs associated with the performance of general administration duties are generated in order to sustain the business and are not incurred due to a direct relationship with customer groups. Therefore, these costs are not assigned to any customer groups.

4.3.5 Revision of Activity Drivers

Although the appropriate activity drivers were identified by management, it was determined during data collection that the information required to use some of the drivers was not available. Other available drivers as agreed with management were substituted. The original activity drivers and those used in the assignment of activity costs to cost objects are illustrated in Table 15, and the % distribution is indicated in Table 16.

Activity	Activity Driver (identified by management)	Activity Driver (Revised)	Cost Object
Housekeeping	No. of bednights	No. of bednights	Customer
Checking guests in/out	No. of stays	No. of stays	Customer
Reservations	No. of stays	No. of stays	Customer
Meeting Room Set -up/ Administration	No. meetings	No. meetings	Customer
Switchboard Operation:			
<i>Costs of Calls</i>	% rev. generated	% rev. generated	Customer
<i>Other</i>	No. of calls	% rev. generated	
Food Preparation/Service:			
<i>Food Cost</i>	% rev. generated	% revenue	Customer
<i>Other</i>	No. of covers	% revenue	
Beverage Preparation/Service:			
<i>Beverage Cost</i>	% rev. generated	% rev. generated	Customer
<i>Other</i>	No. of covers	% rev. generated	
Advertising and promoting the property:			
<i>Cost of advertising</i>	% Estimate	% Estimate	Customer
<i>Other</i>	No. of guests	No. of bednights	
General Administrative duties	Non-attributable	Non-attributable	Business Sustaining

Table 15 - Identification of Revised Activity Drivers

Activity \ Customer Group	Activity Driver	Retail	U.K. Business	Commercial	Individual Traveller	Bands	Weekend	Own Package	Group	Conference	Concession	Bar	Food
House Keeping	No. bednights	15.21%	5.73%	20.14%	12.27%	2.38%	18.66%	13.06%	7.31%	0.25%	4.99%	0.00%	0.00%
Check in/ out	No. stays	13.07%	4.92%	17.30%	14.06%	4.10%	16.02%	8.97%	12.55%	0.43%	8.57%	0.00%	0.00%
Reservations	No. stays	13.07%	4.92%	17.30%	14.06%	4.10%	16.02%	8.97%	12.55%	0.43%	8.57%	0.00%	0.00%
Meeting Room	No. meetings	0%	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%
Switchboard	% Revenue	11.01%	10.79%	33.07%	4.23%	4.35%	6.34%	4.69%	4.29%	0.86%	1.65%	18.70%	0.00%
Food Preparation/ Service	% Revenue	6.85%	4.39%	12.96%	6.83%	1.38%	11.23%	8.06%	9.15%	0.94%	2.79%	0.00%	35.43%
Beverage Preparation/ Service	% Revenue	0.81%	0.86%	1.97%	0.48%	1.64%	16.12%	0.95%	0.18%	0.14%	0.23%	76.62%	0.00%
Marketing (Ads.)	% estimate	0.00%	0.00%	0.00%	0.00%	0.00%	30.00%	20.00%	0.00%	0.00%	0.00%	50.00%	0.00%
Marketing (other)	% Bednights	15.21%	5.73%	20.14%	12.27%	2.38%	18.66%	13.06%	7.31%	0.25%	4.99%	0.00%	0.00%
Total		7.95%	3.73%	12.11%	7.07%	2.13%	15.61%	7.46%	6.02%	1.02%	3.29%	25.10%	8.50%

Table 16 Assignment of Activity Costs to Customer Groups using Activity Drivers (%)

4.4 Results of Revenue Analysis

4.4.1 Average Spend per Bednight

Table 17 details the average spend of a typical customer for each of the customer groups. These figures are sourced directly from guest bills and include service charge at 15% and applicable rates of value added tax (VAT). Accommodation, food and room hire are subject to 12.5% VAT. Bar and other sales are taxable at a VAT rate of 21%.

Note that the average spend for the conference market is by group and not by individual customer as with all other customer groups.

Customer Group	Accomm.	Food	Bar	Other	Room Hire	Total
Retail	48.63 ± 0.68	3.46 ± 0.16	0.82 ± 0.09	1.49 ± 0.14	0	54.40 ± 0.81
UK Business	56.88 ± 1.33	5.88 ± 0.56	2.30 ± 0.36	3.88 ± 0.51	0	68.94 ± 1.67
Commercial	50.12 ± 0.97	4.94 ± 0.36	1.50 ± 0.23	3.38 ± 0.64	0	59.94 ± 1.39
I.T.	29.45 ± 0.27	4.27 ± 0.09	0.60 ± 0.07	0.71 ± 0.07	0	35.02 ± 0.33
Bands	32.45 ± 1.93	4.45 ± 0.44	0.57 ± 0.22	3.76 ± 0.91	0	41.22 ± 2.44
Weekend	32.83 ± 0.47	4.62 ± 0.19	0.74 ± 0.14	0.70 ± 0.05	0	38.88 ± 0.57
Own Package	27.43 ± 1.06	4.74 ± 0.29	1.11 ± 0.38	0.74 ± 0.16	0	34.02 ± 1.08
Group	30.49 ± 0.88	9.61 ± 0.78	0.37 ± 0.12	1.21 ± 0.34	0	41.68 ± 1.23
Conference	103.72 ± 65.19	38.45 ± 8.69	11.17 ± 5.78	9.49 ± 4.81	89 ± 29.31	251.84 ± 83.20
Concession	24.86 ± 2.22	4.29 ± 0.68	0.71 ± 0.38	0.68 ± 0.29	0	30.54 ± 2.66

Table 17 - Average Spend per Bednight (IR£ ± 95% confidence intervals)

4.5 Step Eight: Output Results

4.5.1 Total Spend by Customer Group

The total spend by each of the customer groups, as presented in Table 18, was calculated by using the point estimates in Table 17 and the bednight data in Table 8. However, with respect to the *Conference* customer group, when bedrooms are let during the day as syndicate meeting rooms, this is not reflected in the night audit which generates the information in relation to bednights. The difference between total accommodation revenue generated by the *Conference* customer group of £18,524 and that which could be accounted for by taking the revenue per group multiplied by the number of bednights amounts to £11,365. Management decided that this amount of £11,365 would be an appropriate interim estimate for the revenues generated from the letting of bedrooms as syndicate meeting rooms for the year under review.

The total bar spend for the bands and weekend customer groups includes revenues earned *directly* at the point of sale i.e. cash payment not recorded on customer bills. The extra bar revenues gained at the point of sale, as estimated by management, averaged £10 per customer per night for bands and £12.50 per customer per night for the weekend customer group. These supplemental revenue figures have been adjusted to exclude service charge and VAT.

The revenues attributable to the *Food* customer group have been calculated on the basis of taking total food revenue from the management accounts in Table 2 and subtracting the revenue directly attributable to all rooms related customer groups. The same procedure was followed in terms of attributing the bar revenue to the *Bar* customer group. Additionally, due to the high volume of business generated by the *Bar* customer group, management have used the same basis for attributing the other revenue not attributable to rooms to the *Bar* customer group.

The total revenue contribution by each customer group in percentage terms is shown in Table 19.

Customer Group	Accommodation	Food	Bar	Other	Room Hire	Total
Rooms Related						
Retail	201,691	14,350	3,188	5,793	-	225,023
UK Business	88,822	9,182	3,367	5,680	-	107,051
Commercial	275,326	27,137	7,725	17,407	-	327,595
I.T.	98,559	14,290	1,883	2,228	-	116,960
Bands	21,099	2,893	6,443	2,292	-	32,727
Weekend	167,008	23,502	63,143	3,338	-	256,992
Own Package	97,672	16,878	3,705	2,470	-	120,726
Group	60,741	19,145	691	2,260	-	82,836
Conference	18,524	1,960	534	454	5,402	26,874
Concession	33,829	5,838	906	868	-	41,440
Non Rooms Related						
Bar	-	-	300,125	9,843	-	309,968
Food	-	74,162	-	-	-	74,162
Total	1,063,271	209,338	391,710	52,633	5,402	1,722,354

Table 18 - Total Spend By Customer Group (IR£) (ex. Service Charge & VAT)

Customer Group	Accommodation	Food	Bar	Other	Room Hire	Total
Rooms Related						
Retail	18.97%	6.86%	0.81%	11.01%	0%	13.06%
UK Business	8.35%	4.39%	0.86%	10.79%	0%	6.22%
Commercial	25.89%	12.96%	1.97%	33.07%	0%	19.02%
I.T.	9.27%	6.83%	0.48%	4.23%	0%	6.79%
Bands	1.98%	1.38%	1.64%	4.35%	0%	1.90%
Weekend	15.71%	11.23%	16.12%	6.34%	0%	14.92%
Own Package	9.19%	8.06%	0.95%	4.69%	0%	7.01%
Group	5.71%	9.15%	0.18%	4.29%	0%	4.81%
Conference	1.74%	0.94%	0.14%	0.86%	100%	1.56%
Concession	3.18%	2.79%	0.23%	1.65%	0%	2.41%
Non Rooms Related						
Bar	0%	0%	76.62%	18.70%	0%	18.00%
Food	0%	35.43%	0%	0%	0%	4.30%
Total	100%	100%	100%	100%	100%	100%

Table 19 - Total Spend by Customer Group (%)

4.5.2 Activity Cost Results

Table 20 details the total costs assigned to each of the macro activities taking place in the organisation. These activity costs were established by taking the resource driver distributions established in Table 13 (Assignment of Resource Costs) and applying those to the cost information from the management accounts as reported in Table 2 (Profit and Loss Account), Table 3 (Direct Costs), Table 4 (Overhead Costs) and Table 5 (Labour Costs).

4.5.3 Total Cost by Customer Group

Table 21 details the total cost assigned to each customer group. The total activity costs established in Table 20 have been assigned to customer groups in accordance with the activity driver distributions established in Table 16.

4.5.4 Profit by Customer Group

Total profit by customer group detailed in Table 22 has been calculated by using the revenue totals in Table 18 (Spend by Customer Group) and the assigned costs in Table 21. The percentage contribution of each customer group to total profit and the relative contribution by customer groups are illustrated in Table 23.

Activity Resource	Amount	House Keeping	Check in/ out	Reservations	Meeting Room Administration	Switchboard Operation	Food Production/ Service	Beverage Production/ Service	Marketing	General Administration
Cost of Sales:										
<i>Food</i>	90,661	-	-	-	-	-	90,661	-	-	-
<i>Bar</i>	190,980	-	-	-	-	-	-	190,980	-	-
<i>Phone</i>	22,674	-	-	-	-	22,674	-	-	-	-
Laundry	37,923	28,866	-	-	-	-	6,764	2,293	-	-
Operating Supplies	11,359	7,540	-	-	-	-	2,881	938	-	-
Cleaning	8,507	4,153	-	-	-	-	3,820	534	-	-
Stationery	12,513	-	3,080	-	-	-	1,623	714	-	7,096
Entertainment	6,265	4,770	-	-	-	-	-	1,495	-	-
Crockery	3,181	-	-	-	-	-	2,363	818	-	-
Gas	2,446	-	-	-	-	-	2,446	-	-	-
Adv/Proms	33,148	-	-	-	-	-	-	-	33,148	-
Labour Cost (Basic)										
<i>Reception</i>	49,174	-	30,980	12,844	983	3,442	-	-	924	-
<i>Housekeeping</i>	91,640	87,974	-	-	3,666	-	-	-	-	-
<i>Porters</i>	73,590	3,679	69,911	-	-	-	-	-	-	-
<i>Restaurant</i>	69,850	-	-	-	-	-	69,850	-	-	-
<i>Kitchen</i>	113,308	-	-	-	-	-	113,308	-	-	-
<i>Bar:</i>	119,846	-	-	-	-	-	-	119,846	-	-
<i>Accounting</i>	28,922	4,666	11,192	323	613	346	4,609	5,492	927	754
<i>Management</i>	108,162	11,357	28,122	7,031	-	-	10,816	39,479	-	11,357
<i>Maintenance</i>	31,224	23,106	937	312	312	312	2,186	2,498	312	1,249
Labour (add-on)	31,294	7,486	5,467	824	320	194	9,289	7,212	98	404
Staff ad/trng	2,337	559	408	62	24	14	694	539	7	30
Uniform	5,755	1,394	958	155	56	34	1,739	1,335	12	71
Travel/ motor	11,715	683	1,692	423	-	-	5,858	2,376	-	683
Pensions	31,720	6,049	6,528	948	257	190	9,288	7,740	102	619
Phone/Post	16,881	169	1,857	1,350	169	0	169	169	3,376	9,622
Commissions										
<i>Credit Card</i>	15,000	-	14,250	-	-	-	750	-	-	-
<i>Travel Agent</i>	38,135	-	-	-	-	-	-	-	38,135	-
Sundry										
<i>Bar Licence</i>	3,000	-	-	-	-	-	-	3,000	-	-
<i>Flowers/ Displays</i>	1,000	-	1,000	-	-	-	-	-	-	-
<i>Other</i>	14,152	10,472	424	141	142	142	991	1,132	142	566
Security										
<i>Bar</i>	7,460	-	-	-	-	-	-	7,460	-	-
<i>Admin.</i>	787	-	-	-	-	-	-	-	-	787
Subscriptions										
<i>Marketing</i>	3,000	-	-	-	-	-	-	-	3,000	-
<i>Administration</i>	1,198	-	-	-	-	-	-	-	-	1,198
Heating	13,211	9,776	396	132	132	132	925	1,057	132	529
Rates	71,076	52,596	2,132	711	711	711	4,975	5,686	711	2,843
Maintenance	56,978	42,164	1,709	570	570	570	3,988	4,558	570	2,279
Electricity	23,787	15,224	713	238	238	238	4,044	1,903	238	951
Insurance Premium	53,948	12,948	1,619	539	539	539	3,777	31,290	539	2,158
Insurance Excess	39,197	9,407	1,176	392	392	392	2,744	22,734	392	1,568
Car Park	8,909	-	-	-	-	-	-	-	-	8,909
Bad Debt Provision	965	-	-	-	-	-	-	-	-	965
Equip. Lease	6,265	-	-	-	-	-	-	-	-	6,265
Bank Charges	9,053	-	-	-	-	-	-	-	-	9,053
Total	1,572,196	345,038	184,551	26,995	9,125	29,931	360,557	463,277	82,765	69,956

Table 20 Result of Assignment of Resource Costs to Activities using Resource Drivers (IR£)

Activity \ Customer Group	Total	Retail	U.K. Business	Commercial	Individual Traveller	Bands	Weekend	Own Package	Group	Conference	Concession	Bar	Food
House Keeping	345,038	52,478	19,759	69,508	42,346	8,227	64,367	45,055	25,207	873	17,218	0	0
Check in/ out	184,551	24,112	9,078	31,936	25,942	7,560	29,574	16,561	23,163	803	15,822	0	0
Reservations	26,995	3,527	1,328	4,672	3,795	1,106	4,326	2,422	3,388	117	2,314	0	0
Meeting Room	9,125	0	0	0	0	0	0	0	0	9,125	0	0	0
Switchboard	29,931	3,294	3,230	9,899	1,267	1,303	1,898	1,405	1,285	258	494	5,597	0
Food Preparation/ Service	360,557	24,716	15,815	46,740	24,613	4,983	40,479	29,070	32,975	3,376	10,055	0	127,735
Beverage Preparation/Service	463,277	3,770	3,982	9,136	2,227	7,620	74,680	4,382	817	632	1,072	354,959	0
Marketing (Ads.)	33,148	0	0	0	0	0	9,944	6,630	0	0	0	16,574	0
Marketing (other)	49,617	7,546	2,841	9,995	6,089	1,183	9,256	6,479	3,625	126	2,476	0	0
Assigned Costs	1,502,240	119,444	56,033	181,886	106,278	31,982	234,525	112,004	90,461	15,309	49,451	377,131	127,735
Administration	69,956												
Total Costs	1,572,196												

Table 21 Result of Assignment of Activity Costs to Customer Groups using Activity Drivers (IR£)

	Total	Retail	U.K. Business	Commercial	Individual Traveller	Bands	Weekend	Own Package	Group	Conference	Concession	Bar	Food
Revenues	1,722,354	225,023	107,051	327,595	116,960	32,727	256,992	120,726	82,836	26,874	41,440	309,968	74,162
Less Assigned Costs	1,502,240	119,444	56,033	181,886	106,278	31,982	234,525	112,004	90,461	15,309	49,451	377,131	127,735
Profit Contribution (before Admin. costs)	220,114	105,579	51,018	145,709	10,682	745	22,467	8,722	(7,625)	11,565	(8,011)	(67,163)	(53,573)
% Profit Contribution	100.00%	47.97%	23.18%	66.20%	4.85%	0.34%	10.21%	3.96%	(3.46%)	5.25%	(3.64%)	(30.51%)	(24.34%)

Table 22 Total Revenues, Total Assigned Costs and Profit Contribution of Customer Groups (IR£)

	Total	Retail	U.K. Business	Commercial	Individual Traveller	Bands	Weekend	Own Package	Group	Conference	Concession	Bar	Food
Revenues	1,722,354	13.06%	6.22%	19.02%	6.79%	1.90%	14.92%	7.01%	4.81%	1.56%	2.41%	18.00%	4.31%
Assigned Costs	1,502,240	7.95%	3.73%	12.11%	7.07%	2.13%	15.61%	7.46%	6.02%	1.02%	3.29%	25.10%	8.50%
% Profit Contribution (before Admin. costs)	100.00%	47.97%	23.18%	66.20%	4.85%	0.34%	10.21%	3.96%	(3.46%)	5.25%	(3.64%)	(30.51%)	(24.34%)
Relative Profitability	12.78%	46.92%	47.66%	44.48%	9.13%	2.28%	8.74%	7.22%	(9.20%)	43.03%	(19.33%)	(21.67%)	(72.24%)

Table 23 Total Revenues, Total Assigned Costs, Profit Contribution and Relative Profitability of Customer Groups (%)

4.6 Results of Step Nine: Evaluation of Results

4.6.1 Corporate Estimate of Revenues and Profits Generated at the Site

Table 24 illustrates the collective estimation, by attendees, of the revenues and profit associated with each customer group for the period under review, including the range of estimates identified on an individual basis by attendees.

Customer Group	Total Revenue (individual est.)		Total Revenue (collective est.)	Total Profit (individual est.)		Total Profit (collective est.)
	Low	High		Low	High	
	<i>Rooms Related</i>					
Retail	14%	15%	15%	20%	26%	25%
UK Business	5%	11%	6%	6%	12%	10%
Commercial	20%	35%	20%	20%	40%	30%
Individual Traveller	8%	10%	9%	3%	10%	5%
Bands	1%	2%	1%	1%	3%	1%
Weekend	9%	30%	16%	7%	15%	10%
Own Package	4%	10%	5%	1%	4%	1%
Tour Group	1%	5%	4%	1%	6%	6%
Conference	0%	3%	0%	0%	1%	0%
Concession	3%	5%	4%	1%	6%	2%
<i>Non- Rooms Related</i>						
Bar	10%	25%	15%	10%	25%	20%
Food	2%	5%	5%	-30%	-10%	-10%
Total			100%			100%

Table 24 -Corporate Estimate of Revenues and Profit by Customer Group

4.6.2 Comparison of Results Generated by ProEno and Those Estimated by Management

Table 25 compares the revenue and profit results in Table 23 with the collective estimate of results proposed by management at the Site in Table 24.

Customer Group	Total Revenue (collective est.)	Total Revenue (ProEno)	Total Profit (collective est.)	Total Profit (ProEno)
<i>Rooms Related</i>				
Retail	15%	13.06%	25%	47.97%
UK Business	6%	6.22%	10%	23.18%
Commercial	20%	19.02%	30%	66.20%
Individual Traveller	9%	6.79%	5%	4.85%
Bands	1%	1.9%	1%	0.34%
Weekend	16%	14.92%	10%	10.21%
Own Package	5%	7.01%	1%	3.96%
Tour Group	4%	4.81%	6%	-3.46%
Conference	0%	1.56%	0%	5.25%
Concession	4%	2.41%	2%	-3.64%
<i>Non- Rooms Related</i>				
Bar	15%	18%	20%	-30.51%
Food	5%	4.31%	-10%	-24.34%
Total	100%	100%	100%	100%

Table 25 - Comparison of Results Generated by ProEno and those Estimated by Management

4.6.3 Questionnaire Results

4.6.3.1 Adequacy of existing accounting and information systems

Three of the four respondents, with the exception of the managing director of the hotel group, indicated that the information currently available from the organisation's existing accounting and information systems was inadequate for making customer-related decisions, simply on the basis that insufficient information is provided. The managing director stated that while he feels that the information generated by existing systems is not sufficiently detailed, on-site knowledge combined with limited data can produce the necessary results.

4.6.3.2 Assessing the benefits and application of customer profitability information

All respondents agreed that knowledge of the profit associated with each individual customer group can act as a valuable aid to decision-making. They identified several key customer-related decisions in which customer profitability information could play an invaluable role. These were decisions on long-term rooms contracts, decisions regarding the allocation of marketing resources, pricing decisions and capacity allocation decisions.

4.6.3.3 Degree of confidence in the methodology employed by ProEno to establish results

All respondents stated that they had confidence in the method of statistical analysis utilised in the calculation of revenues by customer group. They also agreed that they fully accepted the validity of the ABC methodology applied in the assignment of costs to customer groups. The financial controller made specific reference to his belief in the effectiveness and accuracy of ABC in cost assignment. He commented that, by only charging to the customer the cost of those activities which are consumed by that customer, ABC ensures that the non-attributable costs that bear no relationship to the customer are removed from the cost assignment process.

4.6.3.4 Degree of confidence in the results generated by ProEno

All respondents expressed total confidence in both the revenue and cost data generated by ProEno in relation to customer groups.

4.6.3.5 The future use of the type of information generated by ProEno

All respondents stated that they would utilise the revenue, cost and overall profit information generated by ProEno when making customer-related decisions in the future. Respondents also indicated how they anticipate using this information in decision-making. Responses included

- the future use of the information as a key contributor to overall strategic marketing
- the future use of the information in cost analysis

- use of the information to ensure that the future focus is on those activities that will add value and profit to the organisation.

4.6.3.6 ProEno: Ease of use of the system

Based on their observation of how the system is operated including issues such as data input and the automatic updating of data fields and reports following data entry, all respondents reported that they found ProEno to be very user-friendly. Several respondents commented on the use of macros as a feature of the system, stating that the existence of menu options and commands greatly enhanced the ease of use of the system.

4.6.3.7 Maintaining ProEno at the Site

All respondents expressed a desire to maintain ProEno at the Site. With regard to the frequency with which the system would be updated, two respondents felt that they would update the system once a year, one respondent opted for an update every half a year, and the final respondent felt that a quarterly update would be most appropriate.

5. Discussion

5.1 Introduction

The objective of this chapter is to give the reader an insight into the issues arising from CPA implementation, as well as those relating to the results generated by ProEno.

Issues will be addressed under three key headings: Issues arising from implementation, Interpretation of output results and Evaluation of activity-based CPA by management at the Site.

5.2 Issues Arising from Implementation

This section outlines various issues that arose during implementation of ProEno at the Site.

5.2.1 Pre-Implementation Seminar

The pre-implementation seminar was a vital component of the development of the system at the Site. The author utilised the seminar as an opportunity to address several issues raised in literature in relation to the acceptance of the implementation process by management. These included educating management about the system, as recommended by Cooper (1991), allaying any fears management had in relation to the introduction of a new way of conducting business (Morrow and Connolly, 1994) and securing the commitment of top management to the project as emphasised by French and Bell (1984).

The net effect of the seminar was that visible management commitment to the implementation of the system was secured, resulting in full disclosure of information and co-operation by all personnel at the Site, thereby enhancing the efficiency with which the system was implemented.

5.2.2 Current Approach to Decision-Making at the Site

At the Site, accounting information is received by management through the profit and loss account, illustrated in Table 2, with this format being used for the layout of both budgeted and actual performance figures. With respect to the costing system utilised, management accounting information follows a marginal cost approach. Contribution is identified at a departmental level, with cost of sales, direct labour cost and direct expenses being analysed by department and deducted from revenue figures to arrive at a gross profit from operations. Other costs, including administration, establishment and marketing costs, are offset against the gross profit figure to arrive at the net profit from operations. The emphasis on departmental contribution was explained by management on the basis that it assists in the aim of maximising the yield from facilities. Similar findings in terms of the presentation of accounting information and its uses were revealed by Collier and Gregory (1995) following an investigation into the type of costing system utilised in a number of UK hotel organisations.

A consequence of the concern of the existing system with departmental contribution is that there is less focus on the appropriate recording of overheads. As a result, some costs, attributable to both direct and overhead cost categories, have been arbitrarily split, giving misleading information in both cost categories. This is evidenced in the arbitrary allocation of car park, commissions and sundry costs in the year end accounts.

Non-financial data, accessed from the front office system in the form of occupancy statistics and forward bookings by customer group, is the second key internal information source for decision-making at the Site.

The accounting/information systems in operation at the Site do not generate any information relating to the revenues generated by customers or the profitability associated with customer groups.

While advances in technology coupled with the sharp decrease in the cost of computing software, have led to the incorporation of features such as revenue reports by customer

group, into many front office systems, for example Fidelio (Fidelio Software, Munich), this was not the case at the Site. The outcome of this was that a statistical analysis had to be completed in order to estimate the revenues associated with the various customer groups. While this process can be justified in terms of the initial testing of the system at the Site, it would not be feasible to conduct such an analysis every time the system required updating, due to the amount of time that would be consumed in the process. This issue is currently under review at the Site, with the front office system being updated to include features such as reports of revenues by customer group.

During site assessment, management identified three key decisions made in the organisation relating to customers; marketing, pricing and capacity allocation decisions. Neither revenue nor cost information by customer group was available or applied in the decision-making process. These findings are consistent with those of Fitzgerald et al. (1990), who observed that 'only professional services appear to use costs routinely for pricing decisions'. In addition, in the case studies observed by Collier and Gregory (1995), none of the hotels under review used customer cost information in decision-making.

Management stated at both the site assessment and evaluation stages that the information available to them for decision-making is inadequate. Furthermore, they suggested that knowledge of the revenues, costs and profit associated with different customer groups would act as a valuable aid to customer-related decisions. It is interesting to note that while the managing director agreed that customer profitability information would greatly enhance management's ability to make decisions, he felt that, taking into account management experience and intuition, there is enough information available to management for decision-making. However, the exercise completed at the evaluation stage clearly emphasised the different perceptions of individuals within the organisation with respect to the revenue and profit contributions of customer groups.

5.2.3 ABC Implementation

During ABC implementation at the Site, several issues had to be addressed. These included the identification and analysis of activities and the identification of appropriate resource and activity drivers.

5.2.3.1 Activity Identification

The activity identification process at the Site resulted in a vast number of activities being identified. For the purpose of this study, it was decided that the ABC model proposed by Turney and Stratton (1992), using the concept of micro and macro activities, would be employed. As the purpose of system implementation at the Site was to gain an understanding of customer profitability, the use of macro activities was deemed appropriate in terms of the level of detail to address in relation to the activities taking place in the organisation. This is consistent with the approach proposed by Cooper and Kaplan (1991).

As illustrated in Section 4.3.1, the number of macro activities identified during implementation at the Site was nine. This is consistent with Mc Bride (1993) who advocates limiting the number of activities in the system to a maximum of between twenty and thirty.

While acknowledging the observation of Kock (1995) that the hotel environment is complex in terms of activity identification, the author found that it was possible to trace all activities taking place in the organisation. This was due principally to the co-operation gained from members of management and staff at the Site.

5.2.3.2 Activity Analysis

The time period chosen for the study at the Site was twelve months. Therefore, the activity analysis conducted had to address how personnel spent their time over that one

year period. Kock (1995) raises the issue of using average time, stating that the time consumed for carrying out different activities must be built on average time consumed. Although one would expect peaks and troughs in customer demand for activities in a hotel organisation over the course of a year, average time spent performing activities was examined in the study, based on the premise that the differences in the time consumed to perform activities tend to level out over an extended time period.

5.2.3.3 Driver Identification

The simple rule applied during implementation at the Site was that each activity may only have one driver. Each of the micro activities taking place within the same department and with the same activity driver were aggregated to form one macro activity, with each macro activity having only one cost driver in the assignment of costs to customer groups.

During the study, it was necessary to substitute alternative drivers when the data required was not available, specifically, % telephone revenue had to be substituted for the number of calls and % food/beverage revenue for the number of covers served, in the distribution of relevant activity costs to customer groups. In addition, it was sometimes necessary to rely on estimates derived from interview data in the assignment of both resource and activity costs, for example, in the assignment of costs associated with the marketing activity to customer groups. Using the axiom quoted by Cooper (1991), 'it is better to be approximately right than exactly wrong', management decided to accept the utilisation of informed estimates in the assignment of costs.

However, it is anticipated that in light of the experiences gained from initial implementation at the Site, the driver data currently unavailable, for example number of covers served, will in future be recorded at the Site on an ongoing basis.

5.2.3.4 To assign or not to assign?

Management at the Site decided to assign all utility costs, including heating, electricity and rates to the various activities taking place in the organisation, the cost of which would be consequently borne by their customer base.

It may be argued that all or some of these utility costs, in particular the cost of rates, occur independently of the servicing of customer groups and are, therefore, non-attributable costs. However, the parameters set for the purpose of ABC implementation will differ from one organisation to the next, depending on the business issues that management wish to address, and the costs which they consider to be relevant to those issues.

5.2.4 System Design

In the last decade, there has been a proliferation in the number of software organisations developing specific ABC packages. While the cost of such packages has decreased somewhat in recent years, it represents nevertheless a major financial investment for a small to medium-sized organisation. One issue rarely raised by advocates of ABC is that the use of a spreadsheet programme, an existing feature of most organisations, can be extremely effective in the development of an ABC system.

ProEno was developed at the Site using the spreadsheet program available in the organisation, *Lotus 1-2-3: (Ver. 2.2)*. It was found that the computing capabilities of this program were adequate for the development of the system in terms of data manipulation and automation facilities. The advantage arising from the automation of the system was that management fears of a non-user friendly package were allayed. In addition, because management was familiar with the Lotus environment, the amount of time required to train members of management in the use of ProEno was reduced considerably.

5.3 Interpretation of Output Results

The implementation of the customer profitability system at the Site incorporated the application of Turney and Stratton's cost view approach to ABC. All revenue and cost information was accumulated with a view to providing summarised data for each of the customer groups in the form of total revenues, total assigned costs and contribution to total profit. While it was necessary for the purpose of this study to detail all such accumulations of revenue and cost, the reader should be wary of interpreting the intermediate data, as it was not prepared to fulfil the objectives of the process view approach to ABC. The objective of this study was to provide information to facilitate strategic decision-making and the results are discussed in that context.

5.3.1 Profit by Customer Group

Based on the profit results presented in Tables 22 and 23, several observations may be made.

5.3.1.1 Profitability of the Retail, Commercial and UK Customer Groups

The *Retail, Commercial* and *UK* customer groups can be categorised as high profit contributors. The significance of this category in terms of contribution to total profits is demonstrated as follows. This customer category generates 38% of total revenues and 24% of total assigned costs, resulting in a contribution of 137% to total profits. This finding is consistent with those reported by Cokins et al. (1993), illustrating that an activity-based CPA can reveal that a small proportion of the customer base is generating more than 100% of the profits.

Based on this profitability information, management may endeavour to increase the revenues generated by the high profit contributors by developing appropriate marketing strategies to promote new business from this customer base. In addition, an opportunity exists for management to focus on building customer loyalty from existing business in these customer groups. At present, there is no guest history facility available in the front office system for retrieving information on guests. If management are to develop

strategies to increase guest loyalty, using direct mail or promotions, it is important that this facility be incorporated into the front office system.

5.3.1.2 Profitability of the Individual Traveller, Bands and Own Package Customer Groups

The marginal profit contribution of the *Individual Traveller, Bands, and Own Package* customer groups to total profits may warrant a review by management. Issues to be addressed may include a review of future contract terms to be negotiated with various tour operators (in the case of the *Individual Traveller* customer group) and public relations companies (in the case of *Bands*); and a review of the components of the service package offered to the *Own Package* customer group in order to ascertain the components which add value to the package offered and those which can be eliminated, thereby reducing costs.

5.3.1.3 Profitability of the Weekend Customer Group

In relation to the *Weekend* customer group, it may be observed that, while this customer group is the fourth highest contributor to overall profits at 10.21%, its relative profitability is only 8.74%.

In many city-centre hotels, where corporate business utilises the bulk of bedroom capacity mid-week, discounted weekend rates are often offered in order to stimulate demand and fill idle bedroom capacity during weekend periods. While the Site caters for a large volume of corporate business mid-week, there is also very high demand for accommodation at weekends. Given the year-round demand for weekend accommodation at the Site, it is surprising that the relative profitability of the *Weekend* customer group is so low.

Based on the thesis that pricing is market-driven and demand for weekend accommodation is high, there is scope for management to review, and perhaps increase, the rates charged to this customer group, thereby enhancing the relative profitability and overall profit contribution of this customer group.

5.3.1.4 Profitability of Group Customers

The profit results generated by ProEno indicate that *Group* customers are generating a negative contribution to total profit. As there can be an extended lead time (often amounting to a year) between the time at which a tour operator books accommodation for a tour group and the time of arrival of that group, management must decide whether to accept that business or retain the bedroom capacity in the hope of achieving a higher rate from another customer group with a shorter lead time. As CPA reveals a negative profitability in relation to *Group* customers, management may consider the re-negotiation of contract terms with tour operators in relation to guaranteed booking clauses or pricing, in order to convert this customer group from a loss maker into a profit contributor.

5.3.1.5 Profitability of the Concession Customer Group

The concept underlying a concession rate is that the guest is charged a discounted accommodation rate established by management - the purpose of the rate being that it is sufficient to cover the costs incurred in servicing the guest stay.

With respect to the *Concession* customer group at the Site, the results generated by ProEno indicate a negative contribution of -3.64% to total profit. This indicates that the rate being charged to the concession guest is not sufficient to cover the costs associated with the guest stay. It may be suggested that management examine the costs associated with this customer group or alternatively, consider a slight increase in accommodation rates charged to this customer group in order to, at worst, break-even.

5.3.1.6 Profitability of the Conference Customer Group

Although it appears from Table 23 that the conference customer group has a relative profitability of 43.03%, the large estimate for the day-letting of bedrooms as syndicate meeting rooms referred to in the results (42% of total conference customer group revenue) may distort the profitability of this customer group.

Management have begun to record data relating to the letting of bedrooms as syndicate meeting rooms in order to assess more accurately the revenue and, hence, profits associated with this customer group in future analyses.

In relation to the usage of meeting room capacity by the *Conference* customer group, it may be observed that, during the period under review, the meeting room was occupied for approximately eighty days over the 365 day period. Hence, if the relative profitability results achieved by this customer group in the period under review are borne out in future studies, management may decide to focus on the utilisation of the idle meeting room capacity, given the ancillary revenues generated by this customer group.

5.3.1.7 Profitability of the Non-Rooms Related Bar and Food Customer Groups

Results indicate that both non-rooms related customer groups, the *Bar* and *Food* customer groups, are generating a considerable negative contribution to total profits.

In relation to the *Bar* customer group, Table 23 illustrates that, while this customer group is the second highest revenue earner at 18% of total revenue, it is the greatest loss maker generating a negative contribution of -30.51% to total profit. A key factor contributing to the negative profit performance of this customer group is that it has been assigned a significant proportion of the costs associated with the beverage production/ service activity.

In terms of activity costs, Table 20 illustrates that it is the Beverage Production/Service activity that generates the greatest costs, at 29.47% (£463,277). The key resource costs driving the total cost generated by the Beverage Production/Service activity include the following:

- **Direct Labour Cost (Basic)**

This cost of £167,315 comprises not only of the basic wage for bar staff but also reflects the contribution of accounts, management and maintenance staff to this activity.

- Labour Related Costs

These costs total £19,202 and include the labour (add-on), staff advertising and training, pensions, uniforms and travel/motor costs, which are directly attributable to the members of personnel supporting the Beverage Production/Service activity

- Insurance Costs

The total insurance cost assigned to the Beverage Production/Service activity amounts to £54,024. This reflects the increased liability associated with the bar activity at the Site.

As the total cost assigned to the Beverage Production/Service activity has been distributed to customer groups using percentage bar revenue as the activity driver, the greatest percentage of these cost has been assigned to the non-rooms related *Bar* customer group. The impact of this is evidenced by the negative contribution of this customer group to overall profits.

The *Food* customer group may also be categorised as a loss maker, generating a negative contribution of -24.34% of total profits. The main factor contributing to this negative result is the very low level of sales generated by this customer group, relative to assigned costs. As Table 19 indicates, this customer group generates 35.43% of food sales, a contribution three times greater than the next highest (commercial at 12.96%). However, this 35.43% represents a monetary contribution of only £74,162 an indication of the low level of overall food sales generated at the Site.

The relationship between the costs and revenues associated with the *Food* customer group is emphasised when the relative profitability of -72.24% of this customer group is considered (see Table 23).

It is evident from the profit results reported by ProEno for the two non-rooms related categories that this strain on the overall profitability of the organisation must be addressed. With respect to the *Food* customer group, it is possible that, given trends in consumer behaviour which indicate a preference for restaurant dining, it would prove difficult for management to increase the revenues generated from this customer group.

It may prove necessary for management to accept the poor revenue generation associated with this customer group and concentrate on addressing cost issues. An assessment of the staff and infrastructure in relation to the food service area could be conducted in order to examine their appropriateness in terms of the volume of business generated in this department. However, physical and industrial relation constraints may impede management decisions to restructure activities or work practices.

With respect to the *Bar* customer group, it may be observed that this non-rooms related customer group is generating the highest proportion of overall bar revenue at 76.62%. Given that (1) most of the total bar revenue is generated by non-resident guests and (2) there exists a direct correlation between the costs assigned to the *Bar* customer group and the Beverage Production/Service activity, it may be observed that the costs directly associated with the *Bar* customer group are being treated as overheads for the entire property by the existing accounting system at the Site, instead of being attributed directly to the bar as an operating department.

5.4 Evaluation of Activity-Based CPA by Management at the Site

Attendees at the evaluation meeting comprised of those who make the customer - related decisions at the Site and therefore, would be regarded as those 'most informed' about the organisation. It is worth noting that customer-related decisions are made by attendees as a team.

In relation to the corporate estimate of revenues and profit generated by the different customer groups, as illustrated in Table 24, it was interesting to observe the range of percentage revenue estimates disclosed by each individual attendee. The revenue estimates for the *Commercial* customer group ranged from 20% to 35% of total revenue, with the estimates for the *Weekend* customer group ranging from 9% to 30% and those for the non-rooms related *Bar* customer group ranging from 10% to 25%.

When the collective estimate for total revenue was compared with results obtained from ProEno, it was noted that both sets of figures were very similar, indicating that

management, when acting as a team, have a good insight into the revenues generated by customer groups.

In relation to profit estimates, the individual estimates for the *Commercial* customer group ranged from 20% to 40% of total profit, with the estimates for the non-rooms related *Bar* customer group and the non-rooms related *Food* customer group, ranging from 10% to 25% and -10% to -30% respectively.

Following the comparison of the collective estimate for profit contribution by customer group against the profit results generated by ProEno, two significant observations can be made. The first is that management estimated the profit contribution by the *Commercial* customer group to be 30%, ProEno generated a figure of 66.2%. The second observation relates to the non-rooms related *Bar* customer group, where management estimated the profit to be 20% and ProEno calculating a profit of -30.51%.

It may be stated that, with respect to the estimation of profitability by customer group, management had difficulty in gauging the profitability of customer groups, both when estimating individually and as a collective group. This result reinforces management's perceived need for information relating to the profitability of customer groups.

Management indicated, both during discussion and in the evaluation questionnaires, that they considered the methodology employed in ABC to arrive at the cost for individual customer groups to be valid. They reinforced this by their acceptance of the profit results generated by ProEno, their expressed willingness to maintain the system and their intention to utilise the information generated by the system when making customer-related decisions in the future.

6. Conclusions and Recommendations

6.1 Conclusions

Customer Profitability Analysis can provide organisations with valuable information for strategic decision-making

In a competitive environment, meaningful information is the key to competitive advantage. The development of a customer profitability system within an organisation allows management to consider revenues, costs and profit from a customer perspective. This type of profit information relating to the profitability of customers can be applied in the decision-making process to support a range of long-term customer-related decisions including marketing, pricing and capacity allocation decisions.

Yield Management, by focusing on revenue maximisation, may conflict with the long-term goal of profit maximisation, by ignoring the implications of cost factors and ancillary spend

It has been proven that yield management practices enable hotel organisations to maximise revenues. With the technological advances of recent years, a number of yield management systems have become available on the market which have the capacity to address ancillary spend, as opposed to older yield management systems which allowed decisions to be based solely on a consideration of accommodation revenues. However, the fact remains that many of the yield management systems currently available fail to examine the cost implications of the customer mix.

While it is acceptable that the focus of customer-related decisions in the short-term may be based on revenue maximisation objectives, yield management is less effective for long-term decision-making, as it fails to address the profit implications of decisions.

The combination of Yield Management and Customer Profitability Analysis in a hospitality environment can enhance decision-making for revenue and profit maximisation

Yield management is effective in the short-term where hotel pricing is market-driven. The focus of customer mix decisions is on the maximisation of revenue. Yield management successfully fulfills this objective.

In the longer-term, however, the emphasis must be on the manipulation of a customer mix that will result in maximum profits. CPA permits consideration of all revenues earned and costs incurred, for both rooms related and non-rooms related customer groups, in the evaluation of customer group contribution to hotel profits. The combination of this information with current yield management practices enables management to focus long-term customer-related decisions on profit objectives.

ABC is the most appropriate method of costing to apply in CPA

The development of a customer profitability system requires an adjustment from the manner in which revenues and costs are traditionally recorded by operating department and overhead categories, to their identification by customer group. While revenues can be directly traced to customer groups, the key to effective CPA implementation lies in the selection of an appropriate method of assigning costs to customers.

While direct costs, by their nature, can be directly assigned to relevant customer groups, the problem arises with overhead cost assignment. Traditional costing methods dictate that overhead costs be assigned to customer groups in proportion to the volume of business generated by each customer group. However, this method of allocation would result in high volume customer groups being overburdened with costs and costs being underassigned to low volume customer groups.

Using ABC, the underlying assumption is that it is activities and not the customer which are generating costs. ABC recognises that many overhead costs are transaction, rather than volume, driven, and addresses the problems inherent in using only volume-

based drivers in the allocation of costs to customer groups, by introducing multiple drivers. By using multiple drivers, ABC examines the true relationship between costs, activities, and customer groups. Therefore, costs will only be assigned to customer groups based on the proportion of activity costs generated directly by them.

The concept of CPA, using ABC, is applicable in a hotel environment

ABC was initially introduced into the manufacturing environment as a method of assigning costs to products. Since its introduction, the uses of ABC have extended beyond product costing, with ABC currently employed, for example, in the assessment of the profitability of both products and customers. It has been argued that there is no valid reason why ABC should remain the preserve of manufacturing organisations. The changes that led to the introduction of ABC in the manufacturing sector apply equally to services, with one exception - many service organisations, by their nature, remain very labour-intensive. While case study evidence exists which supports the use of ABC in labour-intensive service organisations, there is no literary evidence of ABC application in a hotel environment. Indeed, the very concept of ABC in the context of CPA has received very little exposure.

When one considers the activity-based CPA process, the components required for the analysis include identifiable customer groups and revenue and cost data by those customer groups. The information contained in yield management systems, i.e. the customer groups defined and the preliminary revenue data identified by the system, actually forms the basis of the CPA database. Any additional revenue data required may be obtained from various sources, including the property management system or direct billing. With respect to the analysis of costs by customer group, there is no apparent reason why ABC would not be an appropriate method of costing to apply when one considers that the characteristics of the hotel environment parallel those of other labour intensive service organisations where ABC has been successfully applied. On this basis, one may conclude that it is conceptually feasible to apply activity-based CPA in a hotel organisation.

It is technically feasible to apply CPA, using ABC, in a hotel organisation

In order to examine the technical feasibility of implementing an activity-based CPA in a hotel environment, the author developed and implemented a customer profitability system at a test hotel site.

All the components necessary for the analysis were identifiable at the Site, this being attributable primarily to the participation and co-operation of both management and staff. The key components included:

- *Clearly defined customer groups:* resulting from the revision of those customer groups already in use at the Site
- *Revenue data by customer group:* sourced directly from guest bills
- *The activities being performed in the organisation and the amount of personnel time spent performing those activities:*
sourced from interviews with management and staff
- *The appropriate resource/activity drivers for use in the assignment of costs to activities/activity costs to customer groups and relevant driver data:*
sourced from interviews with management and staff, with the use of substitute drivers and informed estimates when driver data was unavailable

Due to the fact that all components for the analysis were identifiable, it was possible to ascertain the profit contribution made by each individual customer group to overall profits. On that basis, it may be concluded that it was technically feasible to apply activity-based ABC at the Site.

Activity-based CPA does not require a substantial investment in sophisticated software

The use of available spreadsheet software at the Site was effective in the development of the activity-based CPA. This led to the conclusion that it is unnecessary for small to medium-sized organisations to invest large amounts of money in specialised ABC

packages, when the tools already available in the organisation are capable of handling and manipulating the data required for the analysis.

Activity-based CPA can be expensive in terms of the time consumed by the implementation process

The implementation of an activity-based CPA can be extremely time consuming and expensive. Intensive interviews must be held, numerous records must be searched, and assumptions must be made when the required information is not available.

CPA is justifiable only if the cost-benefit of compiling the information is favourable and the outcome of any subsequent strategic decision leads to income increases. Strategic decisions may range from changing the terms of a customer's contract to terminating business dealings with an unprofitable customer.

The information generated by the activity-based CPA must be applied in decision-making in order to yield benefits to the organisation

CPA is a valuable addition to the armoury of techniques available to management. However, it is important to realise that the analysis merely gives management information. It is how they use that information that will affect the performance and ultimate profitability of the organisation.

While management at the Site anticipate using the information generated by the CPA in future customer-related decisions, it is too early to say whether the implementation of CPA at the Site has enhanced the profitability of the organisation. However, it may be concluded at this stage that CPA has benefited the organisation in terms of its capability to generate valuable information that management had not been able to access previously about their customer groups. Following CPA implementation, management have accurate information relating to the revenues generated by each of their customer groups, and they also have a greater insight into the costs associated with servicing their customer base.

There are ancillary benefits accruing to the organisation from ABC implementation

Advocates of the activity-based approach contend that ABC has enhanced, not only the field of accounting, but the management of organisations in general.

When one considers the ancillary benefits accruing from the implementation of ABC in relation to the Site, one may conclude that ABC has helped management to gain a much greater understanding of how costs are incurred, and has encouraged management to focus attention on those activities that are not adding value to the organisation's relationship with customers. The process of implementation of ABC has also generated a greater awareness of cost, at both management and operational staff levels.

6.2 Recommendations

Due to the experience and knowledge gained from implementing ProEno at the test site and from the analysis and evaluation of the results obtained, the following recommendations can be made.

Management should recognise the need for a strategic approach to customer-related decisions.

Management cannot afford to pigeon-hole yield management, ABC or CPA and examine each in a blinkered fashion. These techniques must be employed simultaneously, and in conjunction with an organisation's existing accounting/information system, so that all aspects of the customer mix can be considered, with projected costs and revenues appropriately quantified.

In addition, the development of a customer profitability system is one way in which management accounting can influence, and contribute to an understanding of, business strategy. It is important to emphasise that no single accounting system can meet all of

the needs of strategic management. Management accountants must develop an awareness of these needs, together with the skills to design appropriate systems independently from the organisation's main financial accounting system.

Top management should establish what business issues the activity-based system is being developed to address.

Without clearly identifying those issues, it will be impossible to make system design decisions, such as the decision regarding the level at which to examine the activities taking place in the organisation. A good working rule is that the model should not be so general that it does not reveal anything new or so detailed that it splits hairs and does not lead to decisions that may produce more profits.

A pre-implementation seminar should be included as a component of the CPA implementation process.

The seminar can provide a valuable opportunity to educate management about the principles and concepts underlying an activity-based CPA, to allay any fears management may have regarding the future role of the system in the organisation, and to secure management commitment to the project.

The number of drivers to be utilised in the system should be maintained at a manageable level.

Where the driver data is not available, informed estimates or substitute drivers will have to be used as an interim measure for initial implementation, with subsequent updating of the system following the collection of such driver data.

Management should ensure that the initial data utilised in the development of the CPA is as accurate as possible.

The validity of a CPA system rests on the integrity of the initial data. While the objective of conducting a CPA is to generate information for decision-making, the success of those decisions will be dependent upon the accuracy of the information provided in the CPA. As the data required for the analysis may not be available in the organisation to get the system 'right' on initial implementation, the objective is to gradually refine and fine tune the system over a period of time.

Management should recognise that an ABC implementation requires a long-term focus.

Neither tangible nor intangible benefits are likely to be experienced early in the implementation of ABC. Companies should plan to spend a period of time learning about and implementing ABC and cost-benefit studies should take this into consideration.

Management should conduct a pilot study and evaluation of CPA before proceeding with a company-wide implementation.

Activity-based CPA may not be the right course of action for every company. In order to investigate the appropriateness of CPA for a particular organisation, a pilot study should be conducted in order to test the recording of revenue and cost information by customer group. If the results do not enhance or add significantly to the information already available in the organisation, then activity-based CPA may not be worth the associated implementation and maintenance costs.

Recommendations for further research.

The concept of CPA, using ABC, is in its infancy in the hotel environment. Thus, there is much scope for further research in this area. Essentially, it is necessary to conduct

additional test applications of activity-based CPA in the hotel environment to examine some of the implementation issues, such as, the identification of drivers and the ease and practicality of data collection. An area of particular interest would be to conduct a study of the implications of ancillary spend on overall revenues and associated costs in large hotel organisations with substantial food and beverage and banqueting facilities. Another area of research may be in the investigation of the potential role of standard costing within the ABC process, for example, in the costing of room check-in or housekeeping activities.

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APPENDIX A

Site Assessment Interview Schedule

- Description of the organisational structure.
- Description of the key areas of operation.
- Identification of the key decisions that are made at the site in relation to customers, and management's approach to decision making.
- Identification of the data available to management for making customer-related decisions.
- Addressing the adequacy of available information for decision-making.

APPENDIX B

Activity Analysis Grid

Activities and Processes						Function	_____
						Manager	_____
						Date	_____
Name ↓	Activity →						Total
Driver →							100%

Source: (Sharman, 1994, p14)

APPENDIX C

Documentation Distributed for Completion

by Participants at Final Evaluation

Customer Spend and Profit Analysis Form

Please complete the table below, giving a percentage value for both the revenue and profit contribution being generated by each of the customer groups, for the year ended 31st October 1995.

Note:

- (a) These groupings are based on those groups identified in the management accounts, with an additional three customer groups being identified for the purpose of assessing customer profitability. Two are non-rooms related categories, *Bar* and *Food* i.e. the non-resident customers using the bar and food areas. The third customer group, the *Conference* customer group represents those clients availing primarily of the meeting room (included at present in the *Commercial* customer group).
- b) A loss making customer group should be represented by a minus (-) in the % Profit column, with all profitable and non-profitable customer groups totaling 100% of profit.

Customer Group	% Total Revenue	% Total Profit
<i>Rooms Related</i>		
Retail		
UK Business		
Commercial		
Individual Traveler		
Weekend		
Bands		
Own Package		
Tour Group		
Conference		
Concession		
<i>Non- Rooms Related</i>		
Bar		
Food		
Total	100%	100%

Questionnaire

1. Do you think that the customer-related information generated by your existing accounting/information systems is adequate for making customer-related decisions?

Yes

No

Please, specify why:

2. Does your existing accounting/information systems provide information on the profit generating ability of individual customer groups?

Yes

No

3. Do you think that it is beneficial to know the profits generated by individual customer groups?

Yes

No

Why?:

4. In what specific customer-related decisions do you think that customer profitability information can be particularly beneficial?

5. Do you have confidence in the methods employed in ProEno to establish:

(a) Revenues by customer group

Yes

No

If not, why?

(b) Costs by customer group

Yes

No

If not, why?

6. Do you have confidence in the results generated by ProEno?

(a) Revenues by customer group

Yes

No

If not, why?

(B) Costs by customer group

Yes

No

If not, why?

7. Do you think that you would utilise the type of results generated by ProEno when making future customer-related decisions?

Yes

No

If yes, how?

If no, why?

8. Would you consider ProEno to be user-friendly?

Yes

No

If No:

(a) Why?

(b) Could you suggest how the system could be made easier to use?

9. Would you consider maintaining ProEno for future use in your organisation?

Yes

No

If yes, how often would you be likely to update the system?

Quarterly

Half yearly

Yearly

Other

If *other*, specify:

If no, why?:

10. Any Other Comments:

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Signed:

Date: