

# The Effectiveness of a Management Planning and Control Model for Australian Small Businesses

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*A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy*

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## **Declaration**

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work which has been carried out since the official commencement date of the approved research program; and any editorial work paid or unpaid carried out by a third party is acknowledged; and ethics procedures and guidelines have been followed.

Susan Gay Saunders

7<sup>th</sup> September 2011



## Preface

It is a big thing to step out into business on your own especially when you have responsibility for your children's welfare. I was 37 then, coming from a technical background but well equipped I thought to embark on this new venture. I had recent managerial experience and five years previously had attained a Master of Business Administration (MBA) degree.

My solar power company began life at home with one of the most up-to-date personal computers – a Tandy™ Model 4 together with a printer. It had this wonderful software called VisiCalc™, which I used to do simple accounting and some budgets. As the business grew my management control system (MCS) changed. I moved from a simple accounting package on the Tandy™ to a more complicated one later on (MYOB™ and QuickBooks® had not been invented). The budgets became more detailed graduating to another new package known as Excel™. This software tool had many uses including developing models to predict performance of solar power systems.

The business models that I built were always separate from the accounting package. For years and years I manually entered the actual accounting results into the spreadsheets. These spreadsheets were a great success with the bank. In fact, it seemed that the bank liked my company, as I was rather meticulous with planning and control (being a well trained MBA). My accountant once said that the way I ran my businesses (they multiplied) was not the norm for small business.

Little did the accountant and the bank manager know that I was no different than most entrepreneurs in that I had to be reminded (cajoled?) by my late husband into making sure we knew where we were going every month. This meant having a forward looking perspective and setting goals. The point here is that I understand how hard it is to break away from the primary reason for running the business to attend to accounting and forward projections. In my case it was the excitement of being a pioneer in the solar power field where we were constantly developing new products, being immersed in technical matters and being responsive to our customer's needs. To be truthful, to have to break away to attend to the planning and control function was difficult.

The other significant point to highlight is my admission that despite having studied accountancy for three years and attaining excellent marks, I still found it difficult, in the early days of my company, to understand the practicalities. I was often momentarily confused

about which were the debits and which were the credits and really did not appreciate the value of the balance sheet for quite some time. These two observations are important, as they are similar to case study participants' reaction when using the computer-based planning and control tool developed for this research.

Thus I come with a background of being the owner of several small businesses over a period of 27 years of which 10 years have been spent in consulting. Many of my clients were small business owners like myself. I am well aware of the problem that this research addresses from first hand experience.

Well before starting the PhD, I was concerned with the lack of sophistication in the MCSs being used in small businesses. The literature that I have consulted during the research confirms the situation. Essentially there is a lack of knowledge of management accounting, lack of resources to employ consultants or to purchase some of the existing management control software and possibly there is a lack of belief that a formal planning and control monthly cycle is applicable to a small business.

In my role as a small business consultant I have developed many spreadsheet based planning models for client companies. Each one was customised for the organisation's needs. Each time one was developed the consulting cost was significant for these businesses. Many who desperately needed a MCS did not believe that they could afford to go ahead with setting up a custom built MCS.

It was from this experience that the idea for the current research program arose. The proposition was that one could examine the commonalities in management control needs amongst small businesses and formulate a generic process that, if followed, would improve business performance. The process could be built into a software based information system (IS) that would act as a catalyst to encourage the owner-manager (OM) to implement better management planning and control. A further function of the IS would be to provide a learning environment through application of the software.

An assumption at the start of the research was clearly that the process developed would differ from the classic large company MCS such that the particular needs of the small business could be met. It is through this IS development process and with its associated case studies that I aim to contribute to improving MCS processes and knowledge in the small business sector.

## **Abstract**

This thesis focuses on the management control function in Australian small businesses. The main function of a Management Control System (MCS) is strategy implementation. It is the system used by management to plan and control the firm's performance. Elements of the MCS include strategic planning, budgeting, resource allocation, forecasting, performance measurement and evaluation and the core management accounting system (Anthony & Govindarajan, 2007).

Exactly what elements are involved depends on the type of organisation and its characteristic behaviour. Classic texts and research in the realm of MCSs largely revolve around the problems associated with their implementation in large organisations.

This research focuses on Australian small businesses that have less than 20 Full Time Equivalent (FTE) employees. These organisations have particular characteristics that make it difficult to apply standard MCSs techniques to realise desired business outcomes for the owners.

Research in this area is important because small businesses form a large part of most economies (Dyt and Halabi, 2007). In 2009 the Australian Bureau of Statistics (ABS 2010) reported that of the 820,803 employing businesses 89.1% have less than 20 employees. 94% of all Australian businesses have an annual turnover of less than \$A2m.

Clearly, if all of these small businesses improved their performance by adopting improved MCSs, economies would benefit as a whole, as would the stakeholders of each individual business and their employees.

There is evidence to suggest that many small businesses are poorly run and do not reach their full potential (Bianchi and Winch, 2006). OMs of these small businesses claim that they do not have the time to work "on" their businesses (Gerber, 2001) yet evidence suggests that those using formal planning and control methods tend to be the most successful (Kraus et al., 2006; Romano and Ratnatunga, 1994; Brinckmann et al., 2010). In many cases OMs may think strategically about their businesses but lack the management skills to effectively implement a suitable MCS to ensure that the strategies are realised.

The research programme was conducted with five Australian case studies. As a preliminary step, a software based MCS was designed to meet the perceived needs of small businesses. The software, known as the Intelligent Planning and Control Model or IPC Model, was built to address a gap in the availability of a suitable, time efficient tool that is tied into, but is adjunct to, the accounting system. The IPC Model has three primary functions that are to act as:

- A template guiding the owner-manager in a predetermined monthly business control process;
- A catalyst for motivating management improvement; and
- A learning tool through a performance measurement feedback mechanism.

The results of the research showed that, consistent with other empirical research, there was a real problem with the way these particular small businesses were run. The case studies revealed rich data on the owner's attitudes to planning, their business focus, personality and capability characteristics and a wide variety of behaviours that were different to those found in larger organisations.

Following analysis of the data, a theory was developed that enhanced the understanding of the efficacy of the software through the user's perceptions, its impacts on the owner's management control mindset and four key factors affecting adoption of the software.

A significant impact of the software tool intervention was to expose the deficiencies that existed in the case study accounting systems. Changes observed in the adopting owner's mindset involved a forward-looking approach, thinking strategically and exercising adaptive control in the business. The software introduction acted as a catalyst for accounting system improvements. These factors resulted in improved business outcomes.

Two out of the five cases adopted the prototype software and one case was keen to adopt in the near future pending the strengthening of its information technology infrastructure.

The outlook for future work involves the possible commercialisation of the software and the extension of this research to a larger number of cases both in Australia and other countries.



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## List of Abbreviations

Abbreviation	Meaning
AI	Artificial Intelligence
AR	Action Research or Canonical Action Research
AIS	Accounting Information System
Artefact	Also US spelling “Artifact”. An object made by a human being, typically one of cultural or historical interest. (Oxford dictionary). Term used in design-science research that refers to the outcome of that research being in the form of a construct, a model, a method or an instantiation (Hevner, 2004)
ASIC	Australian Securities and Investments Commission
ATO	Australian Taxation Office
BAS	Business Activity Statement (usually required to be submitted to the ATO quarterly. It covers the GST, PAYG instalments and Company Tax payments.
BM	Business Model
BSC	Balanced Scorecard (Kaplan and Norton, 1993)
CAR	Canonical Action Research
CBD	Central Business District
CBIS	Computer-based Information System
CEO	Chief Executive Officer
CFO	Chief Finance Officer
CIS	Customer Information System
COA	Chart of Accounts (in an accounting system)
COS	Cost of Sales
CPM	Corporate Performance Management (used by Prophix software – Section 2.6.7)
CPM	Cyclical Process Model (Research Methods Chapter 3)
CRM	Customer Relationship Management

DR	Design Research, Design Science Research or Design Science
DS	Design Science
DSR	Design Science Research
DSS	Decision Support System
EIS	Executive Information System
EO	Entrepreneurial Orientation [of the OM]
ERP	Enterprise Resource Planning (software)
ES	Expert System
FPC	Formal Planning and Control
FTE	Full-time Equivalent (Employees)
FY	Financial Year
Generic GL	Generic General Ledger included as part of the IPC Model
GL Line Item	General Ledger line containing the monthly predictions for up to 24 months. The line item also includes actual data, moving averages, trend lines, variation between actual and predicted and graphical representations of all components.
GST	Goods and Services Tax (Australia)
GUI	Graphical User Interface
IPC Model	Intelligent Planning and Control Model
IS	Information System
IT	Information Technology
MAS	Management Accounting System
MBA	Master of Business Administration
MCS	Management Control System. It is the system used by management to plan and control the firm's performance.
MIS	Management Information Systems
MO	Market Orientation [of the OM]
MSA framework	Morris/Schindehutte/Allen framework for defining a business model

	(Morris et al., 2005, 2006)
OM	Owner/Manager of a small business (less than 20 employees)
P&L	Profit and Loss (shorthand reference to the Profit and Loss Statement in an accounting system)
PAYG	Employees “Pay As You Go” taxation payments required to be paid quarterly by employers after deducting the tax from employees gross wage or salary
POS	Point of Sale invoicing, inventory control and customer information system
QR	Qualitative Research
RCA	Researcher – Client Agreement
RTO	Registered Training Organisation
SB or SBs	Small Business or Small Businesses
SME	Small to Medium Enterprises (less than 200 employees)
SWOT Analysis	Analysis of Strengths, Weaknesses, Opportunities and Threats used as a tool in traditional business plans
TB	Trial Balance
TPS	Transaction Processing System
USA	United States of America
US	United States of America
WDV	Written Down Value (of assets – accounting term)
YTD	Year to Date (used when assessing performance from Financial Reports)

## Nomenclature

This thesis contains numerous quotations from transcriptions and field notes from working sessions between the researcher and the case study participants (the software users).

A particular format has been used to present these data.

A quotation is noted as indented text in italics as per the following example:

*I would not be coming here every Wednesday if I wasn't getting value out of it. Your program is on its own. It is a quantum leap ahead from a planning point of view for us.*

In the dialogues between the parties the researcher's words are shown in indented plain text. The user's comments or responses are in italic text. The example below shows how there is constant interaction between the two parties. The context and different type style is sufficient for the reader to understand which party is speaking. In this case the researcher is speaking first followed by the user in italics.

Which when you think about it, that it is 2 % per month for 12 months, which is 24% growth in the business, which is good stuff. *Yep.* And there is nothing wrong with that kind of forecast. And then you can see what your actuals are.

*So when you say "actuals" .. oh I see, when you start to bring the figures across each month and then you can make comparison with your prediction and it tells you down there ... and you put your actuals in there .. and the moving average is worked out on actuals. Yeah.*

*That's good. It's very good!*

Sometimes an extract is shown that is taken directly from the researcher's field notes. In this case the extract is shown as indented italics as per the following example.

*At the time when the Case commenced, Hugh was working in the business. He was at the centre from 7am until 7pm at night. He commented that he runs the three businesses as one – on a cash only basis.*

Several diagrams are used in the text. The shapes used in these diagrams have no specific meaning. They are merely used to separate ideas. Similarly full lines, dashed lines and dotted lines used to link the boxes and shapes have no meaning other than to again, separate ideas and to make the diagram easy to read.

## Terminology

There are some terms that are used in this thesis that may be confusing if not explained.

This thesis is about the “planning and control” function in a firm. Terminologies vary with respect to this function. Other terms used are “management control system” which is abbreviated to MCS and “formal planning and control” abbreviated to FPC. Both activities refer to the system used by management to plan and control the firm’s performance and to implement strategy. Elements of the MCS include strategic planning, budgeting, resource allocation, forecasting, performance measurement and evaluation, and the core management accounting system (Anthony, 2007).

There is data interchange between the management accounting system and the planning and control or FPC system. The MCS generally refers to the total system and encompasses the FPC system. Even more encompassing is the Management Information System or MIS in an organisation. This includes all of the information systems or ISs, both financial and operational, that are needed to manage the firm or organisation. All of these terms are used in the thesis where they are appropriate.

The software developed as part of this research programme is referred to as a “management planning and control” system as well as a MCS. The business owner-managers (OMs) use the software and hence it is a management system. The system function is to assist with the “planning and control”. When implemented and integrated with the other ISs in the business, the total management process encouraged by the software is known as the MCS of the business. The other ISs include the accounting system or the management accounting system and various other systems such as Point of Sale (POS) and Customer Information Systems (CIS) are similar. The software can be described as an MCS as it ultimately draws on data from all of these sources and makes predictions using that information. When control action is required as indicated by the software, the other ISs in the organisation are impacted. Data and management action flows both ways between the various data sources. This is the reason that the software developed is referred to as a MCS.

The software is also referred to as a “model”. It is a “management planning and control model”. The word “model” is used to indicate that in the process of using the software a “corporate financial model” of the business is built. It is quite comprehensive in nature

including both goal setting, strategic planning, performance measures, financial forecasts and actual results. These together make up the “model”.

Another set of terms used extensively throughout the thesis is “prediction” and “forecasting”. These terms are interchangeable in this thesis. When a person forecasts (verb) an outcome, the result of that forecast is a prediction. A person can also predict (verb) an outcome. In the software developed as part of this research programme, the section where the user carries out the forecasting task is called the ‘predictions’ section. The act of making predictions is referred to as forecasting.

The word “artefact” or the American spelling “artifact” is used in Design Science to describe the instantiation of the software design. In normal context the word refers to an ancient object that is usually considered to be valuable or even a treasure. In this thesis the word is used to describe the software developed. It is used to distinguish between the software design principles or the software coding and the completed software package that is in a usable form.

In the thesis the software is often referred to as a “tool”. The reason for this terminology is to divert the reader from the concept that perhaps the software itself is more influential than it can be in reality. The user or OM creates the plans and exercises control using the software as a “tool”. Without the user’s thinking and actions, the software itself can only guide or be a catalyst in the process. It is simply a “tool” albeit possibly a “smart tool”.

**Currency.** Unless otherwise stated dollar amounts mentioned in the text refer to Australian dollars.



## **Chapter 1 Introduction**

This thesis identifies a gap in the software tools available to assist the owner-managers (OMs) of small businesses with management control. The alternatives available to build a time dependent financial model of the business are for the OM to use an Excel™ spreadsheet developing a model that is specific to the particular business or to invest in one of the many Enterprise Resource Planning (ERP) software packages that provide a bewildering array of options to implement a management control system.

The essentials of the problem is that the small business owner is either not skilled enough or does not have the time to develop a spreadsheet solution to the management control issue. On the other hand, the standardised approach adopted by the ERP systems, whilst attractive in concept, are an option that is too costly and too complicated for the small business.

The premise of this thesis is that the small business sector needs a software tool that is in between the two alternatives above. As will be shown in the thesis, the characteristics of small businesses generally preclude the adoption of the spreadsheet approach or that of the sophisticated ERP system.

This thesis proposes that there are three parts to solving the problem.

- The first is to be quite clear about the management control process that is applicable in the small business case;
- The second is to define the specifics of an appropriate time dependent financial model that facilitates achieving and maintaining control of the business; and
- The third is to develop a suitable software tool as an enabling agent to allow the process and financial model to be implemented.

The software tool should provide the guidance for implementing a broadly based MCS in the small businesses generally.

This guidance is provided through the **process** inbuilt into the software. The tool is designed for the personal use of the OM of the business. It assists with the formulation of forward looking strategies to achieve the OM's goals for the business, and with planning, forecasting, analysis of performance and the implementation of control measures. Implied in these

functions is the role that the software has as a learning tool - in that it introduces practical methods for OMs to implement effective management control.

The problem being addressed in this research has been nicely summed up by Welsh and White (1981), in their article entitled 'A Small Business is Not a Little Big Business'.

*“A traditional assumption among managers has been that small businesses should use essentially the same management principles as big businesses, only on a smaller scale. Underlying that assumption has been the notion that small companies are much like big companies, except that small businesses have lower sales, smaller assets, and fewer employees.*

*We would argue, though, that the very size of small businesses creates a special condition—which can be referred to as **resource poverty**—that distinguishes them from their larger counterparts and requires some very different management approaches.*

*Resource poverty results because of various conditions unique to smaller companies. For one thing, small businesses tend to be clustered in highly fragmented industries—wholesaling, retailing, services, job-shop manufacturing—that have many competitors which are prone to price-cutting as a way to build revenues. No matter that excessive price cutting quickly destroys profits.” (p.1).*

Even though this article was written a long time ago, investigations of this research show that that situation has not changed. Information systems (ISs) and Management Information Systems (MISs) generally are designed for large businesses. 'Cut down' versions really do not meet the needs of smaller businesses.

In large organisations, management practices are divided into functional groups. For example, marketing, finance, sales, production, purchasing and the like. Management control has much to do with integration of these functions to achieve the overall company goals. In the small organisation these similar functions must be carried out by a small number of persons and often these people carry out cross-functional activities. Whilst both types of organisation measure financial performance based on the classic accounting systems and procedures the implementation of management control is necessarily different. (Welsh and White, 1981; Anthony and Govindarajan, 2007; Chenall, 2003.)

As will be shown in the thesis, management control typically falls within the province of one or two persons – usually the owner and maybe another key owner or manager. Accounting and other information systems are generally not integrated and can be often be performed by external sub-contracted parties which makes it difficult to have the necessary overview approach to planning and control.

The question that arises is: Can a specially designed software tool have an impact on the way management control is carried out in small businesses? What design features are necessary for the success of such a tool? Why would the business need anything more than (say) an Excel™ spreadsheet model of their business?

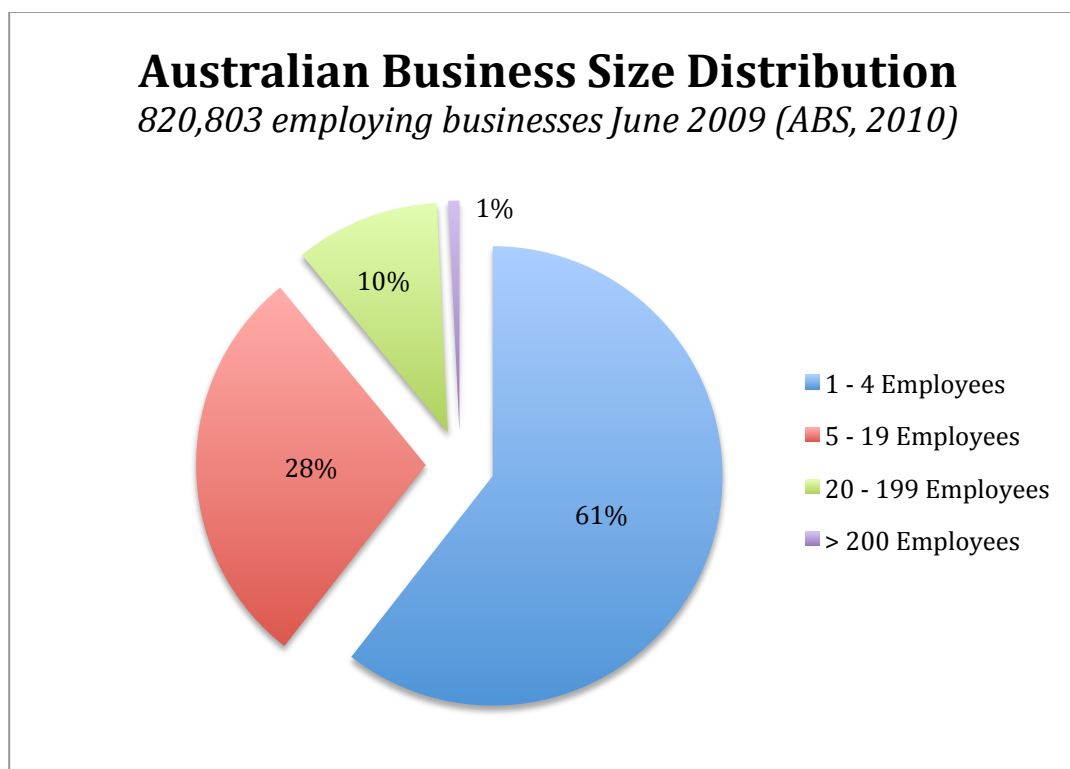
From these thoughts and ideas a research programme was initiated, conducted and reported in this thesis. This introductory chapter briefly outlines the justification for the research, the research questions, how the research programme was organised, the methods adopted, the cases studied and the analysis that lead to a theory explaining the research outcomes.

## **1.1 Why is the Small Business Sector Important?**

Small businesses are a subset of the category known as SMEs or small to medium sized enterprises. The SMEs form a large sector within the Australian economy that is significant in size compared with the rural industries, large mining enterprises and the relatively few large companies. The Australian Bureau of Statistics (ABS; 2002, 2004, 2010) defines SMEs as employing less than 200 persons and classifies businesses that employ less than 20 persons as “small”. Separate statistics are collected for those businesses employing from 1-4 persons. These businesses are sometimes referred to as “micro”. This research deals with both the “small” and the “micro” businesses, which are classified together as “small”.

In 1999-2000 the ABS conducted a special survey specifically targeted at small businesses using the definition of employing less than 20 persons. Although the survey took place some time ago, the results illustrate that the small business sector forms a significant part of a developed economy like Australia's. The survey found that this sector alone, contributed \$96 billion in industry value added - equivalent to 28% of all businesses. These small businesses (including the micro businesses) are present in most industrial sectors, employing (at the time) over 3.6 million people.

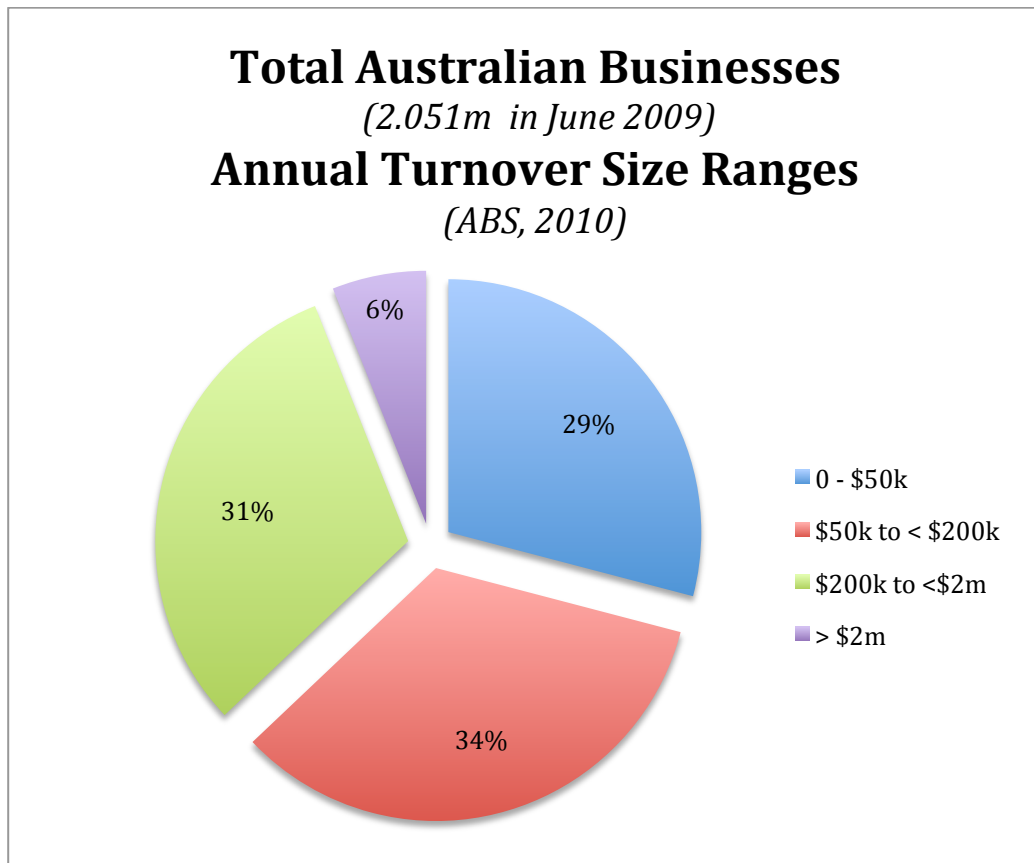
The ABS conducted a study between late 2007 and June 2009. Their report “Counts of Australian businesses – including entries and exits” was released in September 2010 (ABS, 2010). The study found that there were 2,051,085 businesses operating in Australia in June 2009. Of these, 40.0% (820,803) were employing businesses and 60.0% (1,230,282) were non-employing. What is significant is that of the employing businesses 89.1% (731,055) have less than 20 employees. (Refer to Figure 1 below.)



**Figure 1 -Most Employing Businesses in Australia are Small**

In the ABS’s 2001 survey (that was reported in 2002), businesses that had an annual income of between \$10,000 and \$5m were also considered to be small whether employing or non-employing. Figure 2 below shows that most Australian businesses have less than \$2m of annual turnover.

In the 2004 survey, 67.5% of businesses were home based, accounting for 1.04 million people, who were the business owners. The report commented that statistics on the age of these businesses tended to indicate that businesses grow from non-employing to employing over time. The biggest proportion in each case of (a) non-employing businesses (36.2%) were 1-5 years old, (b) micro businesses (35.2%) were more that 5 years old and (c) small businesses (44.0%) were more than 10 years old.



**Figure 2 - Most Australian Businesses have less than \$2m turnover**

One surprising statistic is the large percentage of non-employed businesses. These businesses are often home-based (possibly because of the Internet revolution) or they are sub-contracting their services rather than being in traditional employment with one employer.

Of the 2.074 million businesses operating in June 2007, only 73.6% were still operating in June 2009. This indicates that quite a large percentage (26.4%) fail in the first two years of operation. Slightly more exited in the first year 2007/2008 (58%) than in the second year (42.0%). Survival rates were higher for new employing businesses than new non-employed businesses and were higher for businesses with a turnover more than \$2m in the 2007/2008 financial year.

Business exits statistics do not specify whether the business was insolvent and therefore liquidated. The business may simply cease to operate for various reasons. However, the rate of attrition is still high in absolute terms (547,601 exits after two years) indicating that many businesses are simply not successful. The Australian Securities and Investments

Commission (ASIC) however, collect statistics on businesses that become insolvent (ASIC, 2010).

In June 2010 there were 7,903 current insolvencies of which 76.7% were of companies that employed less than 20 Full Time Equivalent (FTE) persons. 60.3% employed less than 5 FTE persons.

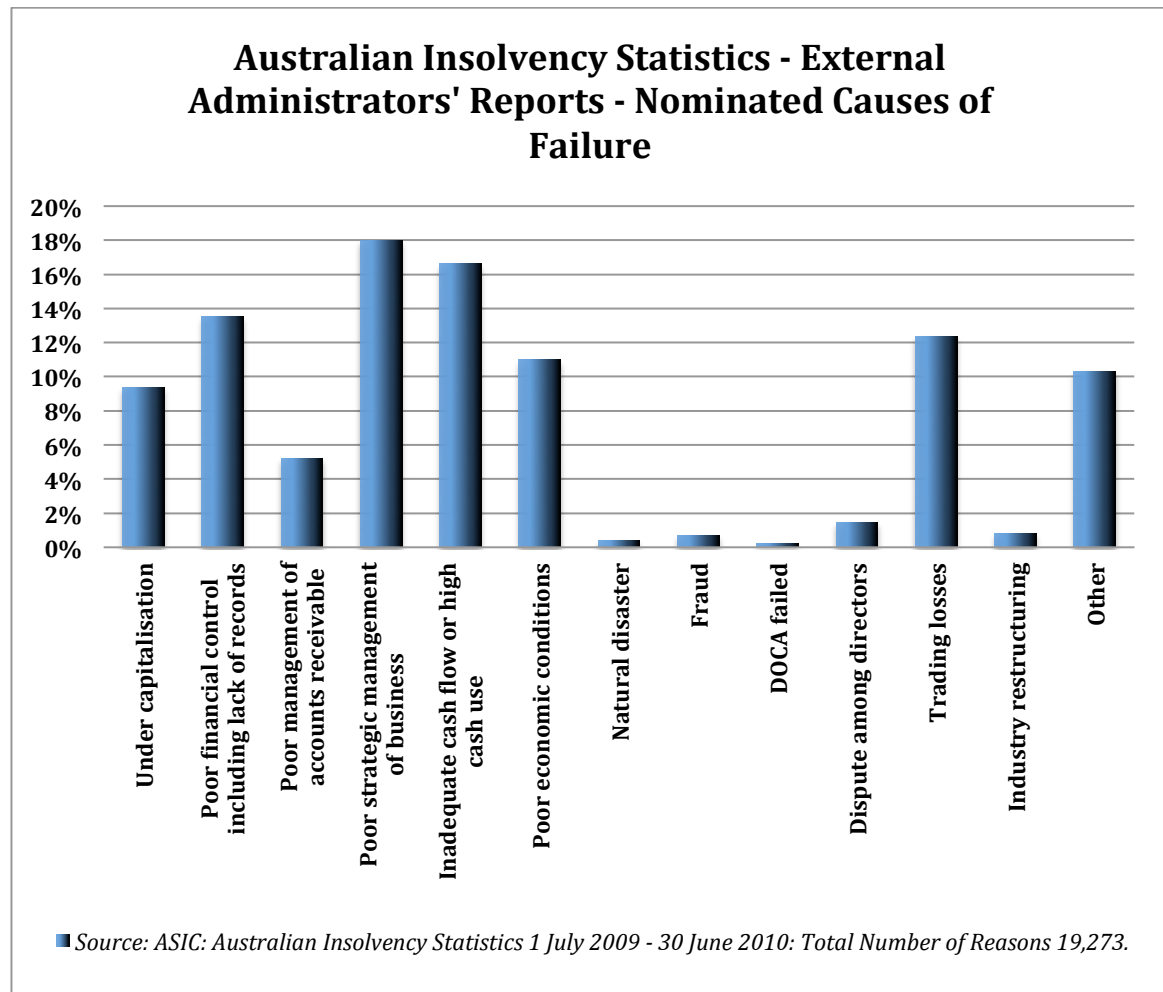
What is evident from the statistics is that small businesses are numerous and form a significant part of the Australia economy but there is a high failure rate in these businesses. This is a sad problem that needs to be addressed. The economy suffers and there is personal distress when new businesses or young businesses fail. Headd and Kirchhoff (2009) have studied the statistics for small business birth/growth/failure in the United States of America (USA or US). They note that over the years the sector remains fairly stable with a constant large share of the economy with minor business cycle effects. This is similar to the Australian situation. Stanton and Tweed (2009) are concerned that research into small business failure tends to focus on negative aspects brought about by the way the problem areas are labelled or 'framed'.

*“Many researchers have accepted that small businesses are likely to fail with the result that their research is aimed at supporting this contention. Such acceptance impacts on policy decisions and decisions of venture capitalists, bankers and potential entrepreneurs.” (p.438, Abstract.)*

ASIC require that external administrators of failed businesses record the reason for the failure. These particular cases are the catastrophic ones where a business is out of control, becomes insolvent and therefore must legally be closed down.

The reasons given for these failures are shown in Figure 3 below. The most common of these are:

- Poor strategic management of the business;
- Inadequate cash flow or high cash use;
- Poor financial control including lack of records; and
- Trading losses.



**Figure 3 - Australian Insolvency Statistics - Causes of Failure**

The argument in this thesis is that much time and effort has been spent on improving MISs that support management practice in organisations. The problem is that the effort has revolved around the needs of large organisations rather than dealing with the needs of the vast majority of businesses that are small and have a small turnover. Small businesses need to be treated as fundamentally distinct entities (Welsh and White, 1981; Raymond, 1985) from a research perspective. This is the gap that is identified in the thesis and that is addressed with the design and development of a MCS for small business. The IS aims to mitigate the four common reasons for business failure noted above, by providing an improved software based tool to guide small businesses towards better management practices.

Small business success or failure is of concern to researchers. Perry (2001) investigated failed “small” firms in the United States of America (USA or US). “Small” is defined as less than 500 employees, which represent 99% of the 21 million entities filing a business tax

return in the US. However the size distribution is important to note. Approximately half of the US small businesses have fewer than five employees and 90% have fewer than 20 employees. Business failure rates average about 70,000 firms annually in that country.

The study featured matched (by size, age of firm, industry and location) paired samples of failed and non-failed businesses. A random sample was taken from the Dunn and Bradstreet database comprising 10 million companies. (Dun & Bradstreet Credibility Corp is a private company headquartered in Malibu, California, USA that provides credit and credibility solutions for businesses throughout the U.S. and Canada.) The survey yielded 152 matched paired cases of businesses that had used trade credit and those that had filed for bankruptcy. The relationship between planning and success or failure was weak but explained by the fact that formal written planning is rarely undertaken by firms with less than 5 employees and more likely in firms with between 5-15 employees. Small retail firms comprised 67% of the sample. Only 35% of the non-failed firms had a high score for planning. The dominant source of start-up capital (84%) was from personal funds. Average relevant industry experience of the OM was 9.5 years. Formal education averaged 14 years (with 12 years being equivalent to a high school diploma). The main conclusion was that very little formal planning goes on in US small businesses; however, non-failed firms do more planning than similar failed firms did prior to failure. A key observation in this survey is that the size of the failed firms (median 4 to 5 employees) was quite small and within the definition adopted in this research.

Lussier and Halabi (2010) have developed a model tested via survey that aims to predict success versus failure in small businesses. The model gave consistent results in the US, Chile and Croatia. They tested 15 variables that contribute to success or failure. Their list is similar to those used in Figure 3 above. The most frequent contributing factor was the **need for planning**. The other most important factors were professional advice, education (of the OM) and staffing (attracting and retaining quality employees). The full list of Success/Failure variables is included in Appendix F for reference.

This thesis not only seeks to look at an MCS that addresses the high rate of business failures but to pay attention to improving the performance of small businesses generally. The existence of a vibrant small business sector has general benefits for the economy and the people involved.



A small business provides the opportunity for people to be creative, to innovate, to move quickly to meet market demands and needs, both within and more commonly in recent decades, outside of Australia. People decide to run their own business for many reasons. Often it is simply a lifestyle choice or a need to have a feeling of freedom – being in charge of one’s own destiny. It may be for growth and profit with the idea of eventually selling the business to fund retirement.

When a small firm starts to grow and achieve financial stability, there is a great deal of satisfaction generated for the business owners and other stakeholders. Small businesses provide a large proportion of the country’s employment. This group’s ability to achieve “superior long-term return on investment” (Porter; 1985, 1991, 2001) or sustainable profitability has a significant impact on the welfare of the Australian economy.

The above considerations – that of reducing the rate of business exits each year and the idea of improving the performance of small business in general are the justification for the research programme.

## **1.2 Special Characteristics of Small Businesses**

Regardless of size or industry type, small businesses can benefit from strategy development and planning and control methods. Empirical evidence suggests that those businesses that use some form of formal planning and control techniques to implement their strategies are the ones that exhibit growth and profitability (Kraus, Harms and Schwarz, 2006; Romano and Ratnatunga, 1994; Jänkälä, 2005; Sandelin, 2008).

The ABS study “Small Business in Australia 2001” noted the special characteristics of small businesses as having:

- independent ownership and operations;
- close control by the OMs, who also contribute most, if not all the operating capital;  
and
- principal decision-making by the owners (ABS, 2002).

This contrasts with larger organisations where management tasks and decision making is divided amongst employees who may have different functional responsibilities or run separate cost or profit centres. In larger organisations, stakeholders do not necessarily work in the company but the Chief Executive Officer (CEO) has ultimate responsibility for the

strategic direction of the enterprise. Usually other specialist personnel are responsible for the detailed strategic planning and ultimately the implementing of those plans.

In a small business, the OM and possibly a small management team has responsibility for both the strategic direction and the MCS that implements that strategy. Often the responsibility for the MCS rests solely with the OM who is usually working in the business at a grass roots operational level. There is a fundamental resource allocation problem when the OM is working full time in the business. Developing strategic plans for the business requires quiet contemplative time. Implementation and monitoring of the plan takes more time. Here lies the essence of the problem faced by the small business owner.

The sustainable success of small business is, therefore, largely dependent on the entrepreneurial ability, management skills, energy and innovativeness of the OM with possibly the assistance from a small team who may or may not be stakeholders in the business. These individuals (that make up the small business management team) can often be limited in their ability to develop an effective MCS to assist with running the business. Empirical research documents the problem of adapting knowledge accumulated for the strategic management and the planning and control of large corporations to the small enterprise context (Gumbus and Lussier, 2006; Hudson et al., 2001).

Further characteristics, such as less focus on strategic processes, modest resources, lack of formality, the need for multi-skilled employees and flexibility in operations; are amply described by Wong and Aspinwall (2004, p. 50) when reporting on knowledge management practices in SMEs.

Gerber (2001) in his well-known book, 'The E-Myth Revisited', highlights the need for the OM to work "on the business and not in the business" and the need for sound management systems to run the business effectively. Many OMs are highly skilled individuals who exploit those skills through their business. It is difficult for these persons to stop producing the business' products and/or services in order to think about the status of the business and its strategic direction. They will claim that they do not have the time to work "on" the business. In many cases, they do not have the management education that allows them to think strategically about their business in a structured way. Nor are they able to effectively carry out forward projections of business outcomes (Hudson et al., 2001; Winch and Arthur, 2002; Bianchi, 2002; Hamilton, 2007).

With significant variability of enterprise structure and capability of the OMs there is wide variance in success. Some businesses succeed and continue to succeed over a long period, some are “stars” that grow rapidly into large businesses, some seem to always struggle and some have a short life. The perpetual question is why does this happen? What are the factors that determine success or otherwise, of these small businesses and what can be done to improve the status quo?

These special characteristics of small businesses are instrumental in the design of the software that is described in detail in Chapter 4. The most important factor in the design is to provide a tool that can be effectively used by the one person – the OM of the business. It differs from the generalised ERP systems that are specifically designed to allow access to large amounts of data as well as planning input from a wide variety of people dealing with different functional areas of the business.

### **1.3 Disclosure Statement**

It is pertinent to disclose the domain knowledge that has influenced the formulation and conduct of this research programme.

The researcher has 30 years of experience running her own small businesses. Sixteen of those years were running up to 8 separate corporate entities simultaneously. These entities included product research and development, manufacturing, distribution, consulting and investment activities. The following eleven years were spent providing management consulting services to small businesses.

Observations and awareness of the problems that owners of small businesses have with implementing management control systems lead to the desire to seek a solution through a carefully formulated research effort.

### **1.4 The Research Questions**

Having determined that a problem exists and that this problem is worth attempting to solve, the primary research question is:

*“How can an improved approach to management control in small businesses be incorporated into a software tool that is effective in encouraging small businesses to improve their planning and control function?”*

In this research the software tool is given the name “The Intelligent Planning and Control Model (IPC Model)”. The act of using the tool as designed has the effect of guiding the user to adopt the management control process that is proposed for the small business. The process is explained in Chapter 4.

When the user has completed the financial planning stage within the software, the result is a complete time dependent financial model of the business. The model arises out of use of the software only. External data input from the accounting system serves two purposes.

- The first is to provide past information to assist the user with making forward projections. Input of past data for this purpose is not necessary to develop a complete financial model of the business but it is helpful if available;
- The second is to enable measurement of performance against the plan in detail and in summary or calculated format.

Several secondary research questions arise in support of the Primary Question.

The **first group** of secondary questions is to observe via the case studies specific indicators of the effectiveness of the MCS. These are:

*“What is the OM’s reaction to the IPC Model? Is it perceived as being helpful in running the business?”*

The purpose of this question is to distinguish the effect that the software tool has on influencing the management control of the business as opposed to simply the techniques and methods being introduced but leaving the implementation tool to the resources of the OM. The premise here is that without the software tool, the management of the small business will revert to the status quo as described in Chapter 2 of the thesis.

*“Does forecasting accuracy and hence control, improve with time?”*

The premise here is that if the OM is able to forecast accurately, then the business must be in control. This question allows for the research to be aware of this effect during the case studies and to look for evidence that the premise is in fact valid.

*“Will the OM be disposed to working “on” the business on a regular basis after being exposed to the IPC Model?”*

The purpose of this question is to observe if the IPC Model acts as a catalyst to encourage the OM to be more pro-active with the planning and control function within the business.

The **second group** has one secondary question that is related to the design of the MCS. Based on the characteristics of the small business the MCS uses a simplified approach to performance measurement and to planning compared to the traditional approach. This is explained in Chapter 4. Thus the secondary question is:

*“Is the level of simplification in the small business MCS still able to be effective as a control mechanism?”*

The **third group** of secondary questions is to observe whether the implementation of the software tool has an educational function for the small business owner. These concepts were formulated as follows:

*“Does the IPC Model have a learning and growth function that allows the OM to gain an enhanced understanding of how business success is achieved?”*

*“Can the IPC Model take the place of a business coach or reduce the need for one, and thus provide a needed service at low cost?”*

## 1.5 Research Objectives and Action Plan

Whenever one begins a research programme, it is important to state the actions required to meet the **main objective of seeking to improve the MCS in small business.**

### **MCS Action Plan**

- After considering the characteristics of small businesses, develop a conceptual model of the factors, which contribute to their success;
- Based on the conceptual model for small business success, develop design principles for an MCS that has the potential to improve the profitability and wellbeing of the small business;
- Based on the design principles, build a prototype computer-based MCS (The IPC Model);
- Implement the prototype software with its implicit MCS in a number of case study businesses;

- Evaluate the effectiveness of the software based MCS through analysis of the case studies' experience; and
- Develop a theory to explain the observations and outcomes.

Apart from the overall objectives of the research programme, it is useful to state clearly the main objective of the software.

### **Software Objective**

- The software's objective is to **act as a template, a catalyst and a learning tool** to allow small business OMs to improve their MCS. It is designed to closely suit the needs of small business differentiating it from other similar software that has been developed for larger organisations.

The results of this research could have an impact in a number of ways as follows.

## **1.6 Desired Impact of the Research**

It is worthwhile to record the desired and possible impact that the research program may have more generally in the community. Three possible scenarios are summarised in what follows:

- First, the research findings make a contribution to knowledge in the application of an improved MCS designed for small businesses;
- Second, the software innovation (the IPC Model) that includes the strategic aspects of defining the business model, forecasting and performance assessment, could lead to substantial improvements in small business management practices over time; and
- Third, the successful commercialisation of the software, could lead to widespread diffusion of the innovation for the benefit of a large number of small businesses.

## **1.7 The Research Approach**

This research takes a qualitative approach in order to answer the research questions. A specially designed combination of Action Research, Design Research and Qualitative Research approaches is adopted. These methods and how they are applied is discussed in Chapter 3 of the thesis.

The need to design and build a software tool as part of the research requires the use of an iterative process that is embodied in the Action Research and Design Research methods.

The evaluation of the proposed MCS system embodied in the software tool (the IPC Model) is carried out in five of Case Studies. This work involved a series of working sessions with the OMs of the businesses where the effectiveness of their implementation of the IPC Model was observed.

## **1.8 The Cases Studied**

Five case studies were chosen. All were located in the city or metropolitan Melbourne, Australia and two had branches in Sydney. These cases are briefly described here. The reader is directed to section 3.3 where the choice of Case Studies and the role of the participants is discussed. (Note that the actual locations are disguised and names used in the thesis are pseudonyms).

### **1.8.1 Fitness Studio**

The first and the most detailed case study is a Fitness Studio that commenced operations in early 2007. The person with whom the study was conducted is one of four OMs. He is responsible for accounting, policy and operations. He similarly manages three other non-related businesses.

The OM commenced his first session as part of the research programme in October 2009. The research had two functions. One was to assess user reaction to the software and to test its functionality. The other was to observe how the software model impacted on the way the business was being run and what were the outcomes.

In the period from October 2009 until end of June 2010, 17 sessions were conducted. They took the form of discussions about the business and assisting the OM with the operation of the program. Each session lasted from 2-3 hours. After the case was formally completed, the OM continued using the software system and associated MCS under a semi-commercial arrangement with the researcher. This work is still continuing and the business is thriving and growing. Currently the turnover is close to \$A1.4m. The business has approximately 10 FTE, mainly casual employees. Positive performance outcomes have been achieved.

### **1.8.2 Dog Day Care Centres**

The second case is a company that is run by a husband and wife team. There are three centres located in different suburbs that cater for both day and night care for dogs. The

centre studied has a turnover around \$A400,000 pa with up to 6 FTE casual employees. Staffing numbers vary according to demand.

The interaction started in March 2010 with the OM providing the General Ledger file from his accounting system for 2008-09. He was quite interested in the project and thought that the software system would be useful for the franchises that he was planning to set up.

His wife is the entrepreneur behind the business. She is meticulous in the way she runs the business having excellent operating systems in place and innovative means to interact with her customers. She was not interested in accounting or MCS matters.

There have been six sessions in this case but on four other occasions, the OM did not turn up to the pre-arranged meetings. Attempts were made to continue using remote communication means but the work met a stumbling block with the accounting system. In September 2010, when the OM became pre-occupied with more pressing business matters, the case came to a halt.

### **1.8.3 Clothing Stores**

The third case is a family business specialising in high quality apparel and accessories. The business commenced with a single store in 2003 and has progressively expanded to three retail stores. The store that was the subject of the study had a sales turnover of around \$A3m pa with approximately seven FTE employees. Each store is operated as a separate entity with the [Location 1] store (the one studied) being the main store that purchases stock and distributes a portion of the stock to the second and third stores in other locations. The business is obviously successful in its area having won prizes as one of five best international stores of its type. It has developed a loyal clientele who provide the stability and consistency for the business.

The key players are a husband and wife team and a sister-in-law who is the bookkeeper. The wife is the entrepreneur and creative person and her husband is the manager.

Sessions began in April 2010 but progress was delayed due to some family problems. From July 2010, sessions began in earnest. In this case there was no inventory control system in place, which posed quite a challenge with implementation of the software system. Despite these problems the owners are enthusiastic about the MCS concept and are keen to improve their ISs. The possibility of continuing work with this company



following the research programme has been discussed. From July 2010 to January 2011, 19 sessions have taken place.

#### **1.8.4 Building Materials Wholesaler**

The fourth case is a company that imports and distributes a series of innovative wood based building materials. The turnover is approximately \$A3m pa with the cost of just three FTE employees being charged to the profit centre. Commissions are paid to other sales personnel and some contract labour is involved.

When they were contacted in May 2010, the researcher met with the owner and her bookkeeper. Initially both players were enthusiastic about the proposed research project and keen to learn the new software. They were interested in the prospect of improving their MCSs.

There are five separate entities managed by the owners. Initial examination of the accounts revealed much confusion with complicated contra accounts and items of expenditure mixed between the entities. The bookkeeper suggested that the research program be confined to just the wholesale company that was formed early in the previous year (2009). As she was completing the accounts for end of financial year, the first session did not begin until August 2010. A total of seven sessions took place.

As of mid October 2010, she defaulted on several planned meetings. She was unable to produce a clean set of accounts for July to September 2010 for input to the software system. At that time the case study was terminated.

#### **1.8.5 Computer Stores**

The fifth case consisted of three stores that sell, install and service computers and run training courses in the use of various business oriented software packages. The study store has a turnover of approximately \$A350,000 with five FTE employees. There are two owners of the company. The OM who was the case participant is a chartered accountant and highly computer literate.

It was decided to deal with one store only for the research programme. This store commenced operations in October 2009. Note that all the stores use a highly regarded Point of Sale (POS) system that provides excellent sales statistics and accurate on-line stock status for all stores. In only two sessions that began in November 2010, the OM had completed his setup tasks and imported all past data for the previous 12 months.

After a one-week business trip, he came back with the profit and loss forecasting completed. This was without any training.

The case proceeded with six sessions until February 2011. The OM has adopted the software system and is keen to include the remaining stores.

## **1.9 Outcomes**

The purpose of this case study research is to draw conclusions from the observations made and to draw out the learning that has resulted from the interactions. Despite the fact that (always) more data could be collected, valuable insights arose from the research. It is these insights and contributions to knowledge that are reported in the thesis.

The results of the research showed that, indeed there is a real problem with the way that the Australian case study small businesses were run. These businesses revealed rich data on the characteristics of the sector and a wide variety of behaviours that are different from those found in larger organisations.

Following analysis of the data collected a theory was developed that enhances the understanding of the efficacy of the software, its impacts on the OM's mindset and the outcomes for the businesses.

In principle there is no geographic limitation to the findings of this research. The theory developed would apply to all small businesses. There is a limitation on the IPC Model prototype software in that adjustments would be needed to encompass an individual country's taxation law. However, the standardised accounting practices adopted in the IPC Model are applicable worldwide.

## **1.10 Assumptions and Limitations**

One of the basic assumptions of this research is that the IPC Model can be the catalyst that improves the quality of management control in small businesses. The reason for adopting a tool as the intervention rather than one of using a coaching approach or providing educational resources, is that these latter measures are already prevalent via government and private coaching/training programmes (ActionCoach, 2011).

A limitation of the research is that the building of the prototype software system took up a great deal of time in the three and a half year research programme. This limited to some

extent the number of case studies that could be completed and the level of detail in the analysis.

The breadth of areas covered in this research is both an advantage and a disadvantage. It touches on three main disciplines.

The first is the area of management control systems that encompass business organisational behaviour, strategy formulation, planning and control, accounting and management accounting. The second is the area of design science that impinges on the design, construction and testing of the software system. The third is the area of qualitative research in information systems, which applies to the observations made in the case studies.

Whilst it is necessary to encompass three distinct research approaches to achieve the desired outcomes, it is also a disadvantage in that depth of coverage in each stage of the programme must be less than if only one research approach was being adopted to complete the research.

## **1.11 Structure of the Thesis**

The thesis is divided into six main sections that follow the introduction. These are:

1. Literature Review (Chapter 2);
2. Methodology (Chapter 3);
3. Software Design and Functionality (Chapter 4);
4. Case Studies (Chapter 5);
5. Analysis of Qualitative Data (Chapter 6); and
6. Conclusion (Chapter 7)

In the literature review a working model or framework is developed that informs the design of the software system in the Chapter 4. Along with the attempts by others to improve small business management systems, past work in the area of small business performance is examined. Evidence that confirms the problems of lack lustre performance of many small businesses is shown in the review.

There are three methodologies adopted in this thesis and these are described in detail. They include action research, which is the primary research method adopted, plus design science during the software development phase and then qualitative methods are used to analyse the findings of each of the case studies.

In Chapter 4, the principles of the software design are established. Following that, the business process and functionality of the software is described.

The thesis then concludes with a reflective section that reports the key research findings and learning that has been gained from the experience. A theory has been developed grounded in the data collected from the case studies. It is compared with the initial ‘small business success’ conceptual model developed during the literature review. The opportunities for expanding the research at a later date are then discussed.

## **Chapter 2 Literature Review**

This research is concerned with the economic well being of small businesses. As they comprise a large sector of the Australian and most other economies, their performance in terms of net added value each year is important. Thus, in the first part of this chapter, the factors that contribute to the success of small businesses are examined. From the literature a working conceptual model of ‘small business success’ (the Small Business Success Model) is developed to explain the inter-relationship between the factors.

Each of the three most important factors, that of OM characteristics (entrepreneurship), the business model (primary market positioning) and the implementation of the business model (the MCS) are examined in some detail drawing on classical theory of business management and traditional IS support.

Following that, the elements of an MCS and its function and benefits are examined.

Whilst some companies (the stars) seem to behave in a way that can be explained by the Small Business Success Model, many small businesses comply at best with only some of the elements of the model. The barriers to effective management control experienced by these businesses are then examined.

Following that, the question of how others have addressed the problem of poor small businesses performance is examined. The different approaches are discussed with reference to the empirical evidence that has been gathered.

The desirability of building “intelligence” or “expert system” characteristics into a software tool is evaluated. Following that, a review of other software that is available for business management purposes examines its relevancy in the small business context.

Finally, a brief review of IT/IS adoption in small business is presented as previous experience in this area has a bearing on the design of the IPC Model system.

It is pertinent at this stage to clarify how the words efficiency, effectiveness and efficacy have been used in this thesis. **Efficiency** is used to explain that a task or action is performed in minimum time and as prescribed. **Effectiveness** is used to describe whether the result of using the IPC Model (the consequence of an action) was to improve the way that

management planning and control is effected in the small business. **Efficacy** is used to describe whether the IPC Model is fit for the purpose intended. Does it have the ability to produce the desired or intended result.

## **2.1 Factors Contributing to the Success of a Small Business**

The first question to ask is why is the business small in the first place? The answer may lie in one or more of the following.

The business:

- is a start-up being less than 3 years old;
- addresses a small, niche market that does not allow for growth;
- operates in a highly competitive market with many players (e.g. a coffee shop, stall in a market, a clothing store, a plumbing company);
- is operating solely for lifestyle reasons and has no plans for growth; and
- is stable and returns an income that is sufficient for the needs of the owner.

This list is probably not complete but it serves to illustrate that there are many reasons for smallness that may not relate to the management practices of the business.

### **What is “business success”?**

The next question to ask is: How is “business success” determined? Certainly an obvious answer is that the business continues to make profits each year after paying the owners an adequate return for their efforts. Along with profitability should be a growth in business equity (value) with time. An outcome such as this ensures that the business is ongoing, contributes to the economy and maintains an income stream for its owners and employees. This is the classic view of all businesses regardless of size (Anthony and Govindarajan, 2007; Porter, 1985).

There are many reasons why a business is formed. In considering the definition of the company business model, Morris et al. (2005, 2006) postulate five strategic positions, which define the basic goal of the business owners. These are:

- Income;
- Managed growth;

- Rapid growth;
- Speculative; and
- Lifestyle.

In the **income model** one would expect to see a stable, well-positioned organisation that is capitalising on its competitive advantage and thus can consistently generate an excellent return on capital.

**Managed growth** implies that the organisation is in control and that growth and profit can be achieved.

In the **rapid growth** case there may not necessarily be adequate profits generated at the same time as sales are increasing. A firm with this type of strategy needs to maintain a well-designed MCS to ensure that in a defined time period, profitability meets the stakeholder's expectations.

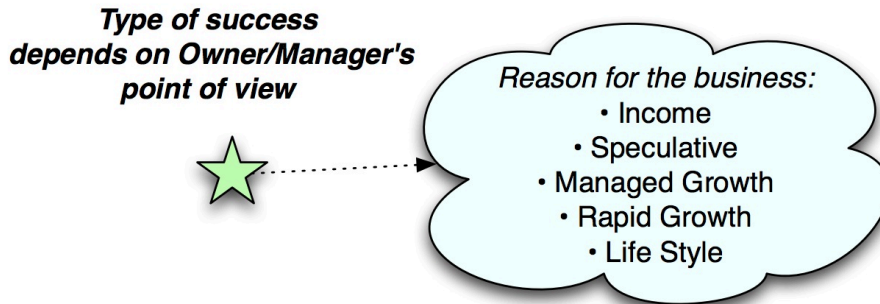
The **speculative model** implies that the organisation is taking risks. It may be a start up with a business model that has the promise of high returns, if certain criteria eventuate. There is no certainty – a probability only – that those criteria will in fact eventuate.

The **lifestyle model** means that the business is ongoing and generates a sufficient return to the satisfaction of the owners. By normal standards the performance of a lifestyle business in terms of profitability may be less than that of a growth or income business.

Walker and Brown (2004) report that personal satisfaction and achievement, pride in job and a flexible lifestyle are generally valued higher than wealth creation in this type of business.

Each of the models above is a particular articulation of differing organisational goals. A logical conclusion from this analysis is that “business success” must represent the attainment of these goals. Another way of defining “success” is to consider the concept that “success is in the eye of the beholder”.

In the small business context, the Small Business Success Model being developed here assumes that if the owners are satisfied, then the business is successful. Thus in a step-by-step fashion a ‘mind map’ or model of the factors will be constructed. The first element of the model is shown below in Figure 4.



**Figure 4 - Reasons for being in business**

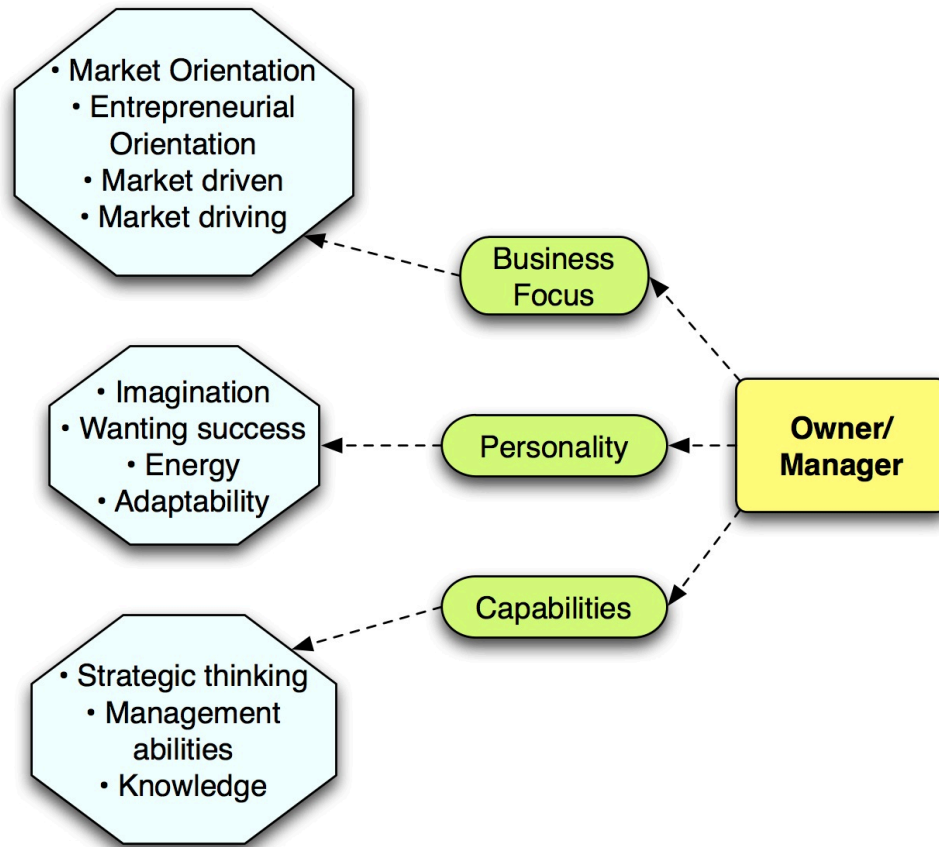
Three basic factors that emerge in the discussion that follows, are key to ‘business success’. These are:

- The characteristics of the OM;
- The business model that defines the business; and
- The skills applied in implementing the business model.

### **2.1.1 Characteristics of the OM**

The second element of the business Small Business Success Model revolves around the OM (Refer to Figure 5 that follows). The OM may be a single person or a small group of OMs that take on different roles in the company. For the purposes of this study, the term OM can have either meaning. The difference between the small business and the larger businesses is that success in a small business is largely dependent on the personality, capabilities and business focus of the OM (either one or a small number of individuals). In the larger business the combined efforts of many individuals working together in a complex organisational structure determine success.





**Figure 5 - Characteristics of the OM**

Baker and Sinkula (2009) differentiate between two constructs of OM business focus that impact on profitability.

- **Entrepreneurial orientation (EO)** – ‘the degree to which the firm’s growth objectives are driven by the identification of untapped market opportunities’ ( P. 443). With this orientation the OM would innovate and then exploit those market opportunities regardless of the behaviour of competing firms; and
- **Market orientation (MO)** – ‘reflects the degree to which a firm’s strategic market planning is driven by customer and competitor intelligence’ (P. 443). This orientation is more of a reactive response to existing market conditions.

Their research suggests that EO and MO need to complement each other (in small businesses) to boost profitability. To some extent the research reveals that a strong EO needs to be tempered by MO aspects to reduce risk of channelling effort towards the wrong opportunities.

Of particular interest, is the OM's attitude to the market. Schindehutte et al., (2008) distinguish between 'market-driven' and 'market-driving' behaviour.

The first implies responding to perceived market needs in a reactive (but none-the-less possibly effective) manner, whereas the latter incorporates the kind of behaviour that is required to create a market that may not exist. It is reported that this latter phenomenon is not well understood although observed in industry. Schindehutte et al. (2008) argue that the firm's general market orientation impacts markedly on its success and that 'market-driving' is a particularly dynamic, advantage-creating activity and that it is also an important entrepreneurial phenomenon.

An observation from the literature on this topic is that 'market-driven' and MO appear to be similar and that 'market-driving' and EO are similar.

Runyan et al. (2008) draws a distinction between the OM's entrepreneurial orientation (EO) and small business orientation (SBO) when investigating how these are related to small business performance. His premise is that not all small business' OMs are entrepreneurs. EO is characterised by such traits as innovativeness, pro-activeness and risk taking. These OMs are generally growth oriented. They ensure that their business adapts to changing conditions when necessary.

SBO is characterised by the OM operating the business as an extension of personality and to further personal goals as well as to generate family income. SBO also encompasses the OMs' emotional attachment to the business including their commitment to a balance in personal/business demands. In this case OMs tend to have goals to reach personally acceptable business performance levels.

Runyan et al. (2008) conducted a survey of 267 small businesses. While the literature suggested that EO was a significant factor in influencing firm performance, the findings showed that SBO can lead to improvement in firm performance and that SBO's influence (surprisingly) outweighed the influence of EO. However there was another factor influencing the results and that was the longevity of current ownership. The data were then split into two-groups of "below 11 years" (n=122) and "11+ years" (n=155). For the younger group only EO was a significant predictor of performance whereas in the older group only SBO was significant.

Runyan's research suggests that with continuance of the business, as the OM becomes more emotionally attached to the business, the more successful the business becomes.

Whereas the younger the small business, the more reliance there is on the OM's EO for positive performance.

English (2001) and Gerber (2001) describe the different roles to be played in a small business not all of which are found in the one person. These can be:

- Entrepreneurial role – that of driving the business, visionary, setting goals;
- Bookkeeping – operational, meticulous recording of financial transactions;
- Manager role – that of measuring performance and keeping control;
- Technician role – the science and technology role that focuses on product/service and competitive advantage; and
- Marketing role – the communication of product/services to customers, generating new customers and maintaining a loyal customer base.

In the really small business, all of these roles fall to the one person – the OM. But not all of these skills are necessarily found in the one person. As the business grows, the roles tend to be taken up by individuals with different and complementary skills to the entrepreneur. Despite this, the business would not exist without the passion, vision and energy of the entrepreneur that are noted as part of the OM's personality in this section of the Small Business Success Model. Other personality characteristics identified are **motivation** (wanting success), **imagination** (needed to drive innovation) and **adaptability** (to maintain a competitive edge).

The last element of this section of the proposed Small Business Success Model concerns the capabilities of the OM with regard to **strategic thinking, management abilities and knowledge**. These characteristics manifest themselves in a number of identifiers that one would expect to find in successful versus struggling businesses (Schindehutte et al., 2008; Porter, 1985; Morris et al., 2006; Gerber, 2001; Kraus et al., 2006; Shafer et al., 2005; McMahan, 1999; Bianchi and Winch, 2006; Lee et al. 2009). For example, successful identifiers drawn from the above references tend to be:

- *Well-informed OM with market driving entrepreneurial orientation;*
- *Clear and sustainable competitive advantage;*
- *Unique processes and methods;*

- *Sound, efficient MCSs;*
- *Forward looking, formal planning and control systems;*
- *A clearly defined business model;*
- *Outstanding web site, adoption of e-commerce and other IT infrastructure;*
- *Able to maintain sustainable profits; and*
- *Business more than four years old.*

Whereas, the struggling business may exhibit identifiers such as:

- *OM working in the business and too busy to attend to strategic issues;*
- *OM has poor understanding of management processes or of formal planning and control procedures;*
- *Poor accounting and management systems;*
- *Unclear competitive advantage;*
- *Unclear business model;*
- *Lack of adoption of web, e-commerce and IT infrastructure; and*
- *Lack of motivation or energy for the OM to change.*

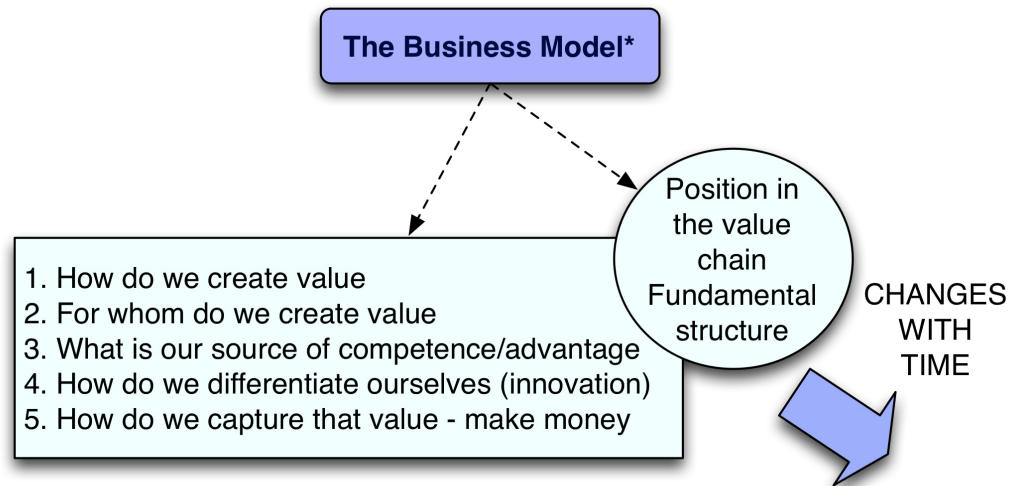
Change is a necessary part of business life. External factors such as market conditions change, customer preferences change, the financial markets change and so on. The OM needs to be responsive to the business conditions and be prepared to change in order to maintain market position. Being able to adapt is noted as an important personality characteristic of the successful OM in the Small Business Success Model.

“Adaption” is an important concept that arises later in the thesis during the software design process and during the analysis of the case study results.

### **2.1.2 The Business Model**

The term “**business model**” has become popular in management vocabulary in recent years arising out of the dot.com boom, but there is no precise definition yet agreed upon in the literature. The term has been used to describe innovative approaches to firms achieving the elusive “superior and sustainable performance” (Porter, 1985) over competitors in an industry. The words have been used to describe the structure and strategies of new businesses that have arisen with the evolution of the internet and then later, the business model descriptions have been applied to other industries. Nowadays,

investors are demanding that entrepreneurs clearly articulate their business models, as a necessary part of their overall business plans (Morris et al, 2006). Thus the second element of the business Small Business Success Model is introduced here in Figure 6 below:



**Figure 6 - The Business Model**

Porter's (1985) theory of competition and the five competitive forces that determine industry profitability form the basis of modern strategic thinking to explain business success. In later years the business model has been used to provide a convenient, almost shorthand way to describe a firm's strategic **position in the value chain** of the economy in which it operates. Its **fundamental structure** concerns its suppliers and customers and its territory. For example, does the business deal with end users, wholesalers, other businesses, large retail chains or a mixture of these. Are its suppliers original equipment manufacturers, component manufacturers, wholesalers or raw material suppliers. Is its territory local, interstate, inter-country, multiple countries or world wide? The fundamental structure is used to clearly describe the businesses position in the value chain.

Shafer et al. (2005) in their literature search found 12 definitions with 42 different business model components and set about developing a unified definition. Firstly they parsed the term "business model" describing the "business" as "concerned with creating value and capturing returns from that value" and the "model" is "simply a representation

of reality”. Thus their definition is “a representation of a firm’s underlying core logic and strategic choices for creating and capturing value within a value network”.

Morris et al. (2006) found 15 definitions and noted that there is no generally accepted framework for capturing the entrepreneur’s business model. Recognising that the business model concept is in need of an accepted theoretical foundation and an agreed framework for description, Morris et al. (2006) developed six core components with a total of 31 factors to describe the business model. Five of those components are shown in Figure 6 above. The sixth component is the *raison d’être* of the business discussed in Section 2.1 earlier.

Morris et al. (2006) conducted two case studies and a survey of 100 high growth entrepreneurial firms with net sales of at least \$US200,000 and four years of sales growth history. The survey showed that indeed the business model of each firm could be described. After cluster analysis, it was possible to characterise the firms into four generic types. These were “Technical Service”, “Standardized Producer”, “Product Franchiser” and “Customized Service”. Whilst this work is an important first step, further research is required to determine how the components of the business model deliver a firm’s sustainable competitive advantage and satisfactory performance.

With small businesses being an heterogeneous group with particular characteristics related to their small size and the fact that both ownership and most decision making resides with the OM, this poses considerable challenges (ABS, 2004; Wong and Aspinwall, 2004; Kraus et al, 2006; Bianchi et al, 2006).

If the framework developed to describe a business model (Morris et al, 2006) is to be of value, it must be able to be applied to any business, large or small, and yet it needs to show the unique characteristics of that business that determine its competitive advantage and mode of operation. In small businesses, the assessment of satisfactory or even excellent performance resides mainly with the perceptions of the OM as noted earlier. Therefore, measurement of performance must reflect the *raison d’être* of the business as well as the all-important need for sustainability.

As noted earlier, small businesses are not known for developing rigour and formality in their business operations. It is surmised that most of their business models would be implicit in the visible and proprietary activities of the business, as well as being a tacit expression of the OM’s vision and aspirations. Despite the problems with the small

business not formally articulating its business model, empirical research has shown that OMs act quite strategically in adapting their business models, from time-to-time, to meet changing market and economic conditions (Schindehutte and Morris, 2001).

A situation could easily arise where a small firm's business model appears to be technically well conceived. The firm has unique processes and has an excellent value proposition, but fails to capture the value as economic returns. The problem lies in the implementation of the business model. This is where the quality of management within the firm becomes important and is why the business model must be viewed as part only of the total conceptual model for business success that looks at the interrelationships between entrepreneurial factors as well as strategic, operational and economic factors (Morris et al, 2006).

Chesbrough (2010) emphasizes the importance of implementation of the business model and then the ability to innovate on the business model as experience is gained.

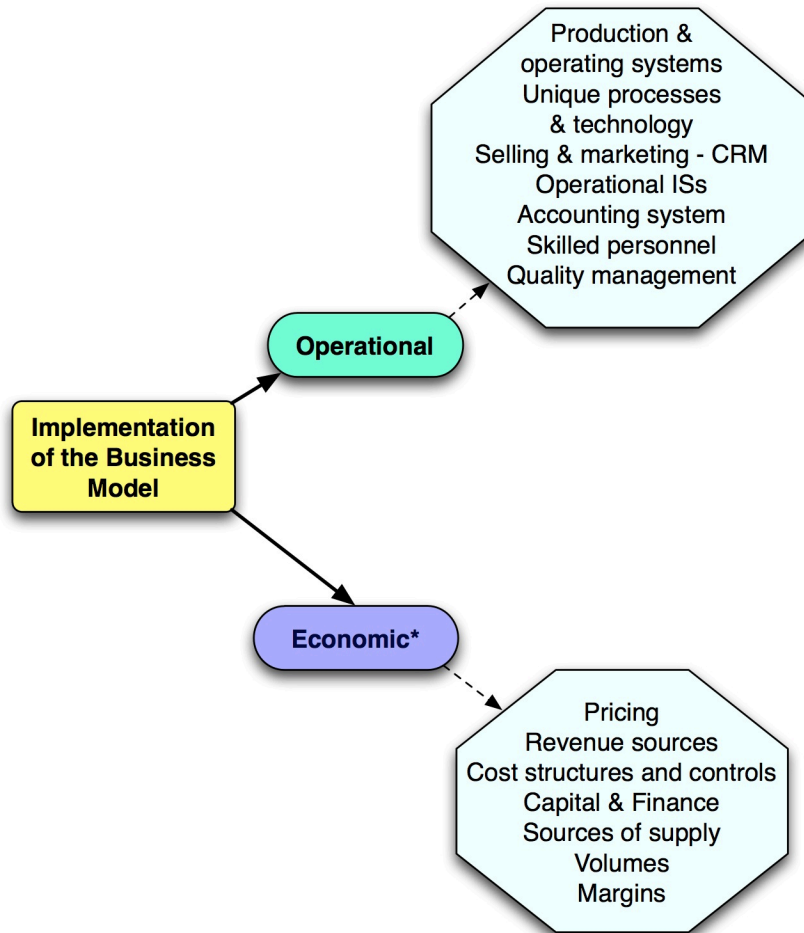
*Companies commercialize new ideas and technologies through their business models. While companies may have extensive investments and processes for exploring new ideas and technologies, they often have little if any ability to innovate the business models through which these inputs will pass. This matters - the same idea or technology taken to market through two different business models will yield two different economic outcomes. So it makes good business sense for companies to develop the capability to innovate their business models.*

Chesbrough (2010) recognizes that business model innovation is vitally important but that it is difficult to achieve for most organisations. As long as failure (of a business model) informs new approaches and effective 'discovery driven' planning is in place, there is willingness for organisational processes to change and progress is monitored, the business model innovation process can be successful.

### **2.1.3 Implementation of the Business Model**

There are two aspects to implementation that need to be delineated when developing a conceptual model for business success. These are (a) the operational and (b) the economic aspects. Both of these aspects are essential elements to business success. As defined earlier, the MCS is the means by which the business implements its strategy. In the conceptual model being developed here, the strategy is articulated via the business

model whereas the MCS encompasses all the activities and operational procedures needed to implement that strategy (Morris et al., 2006). This portion of the Small Business Success Model is shown in Figure 7 following:



**Figure 7 - Implementation of the Business Model**

The lists of activities in the management of a business that are classified as either economic or operational derive from domain knowledge. It is argued that the list is public domain knowledge and similar lists can be found in any management text such as in English, 2001 and Anthony and Govindarajan, 2007. Their exact composition will vary amongst businesses. They are listed in the conceptual diagram to indicate the difference between the strategic Economic and Operational aspects of running a business. They represent the kind of issues that OMs need to deal with when formulating policy concerning how they conduct their business.

**What does implementation involve?**



In terms of classical management theory (Davis, 1974; Davis and Olsen, 1985) the business model structure as described above encompasses the mission, goals and strategies the organisation wants to achieve. The mission being a broad statement of the overall purpose of the organisation, goals are a general statement of what is to be accomplished and strategies are the general approaches needed to achieve those goals.

Implementation cannot proceed without setting objectives (a statement of measurable results to be achieved), plans and budgets (a schedule of specific activities and actions to achieve objectives) and policy (limits to acceptable behaviour, ethical and moral values, decision limits and standards). Davis (1974) and Davis and Olsen (1985) then point out that planning needs access to data and data analysis. After all, performance outcomes are ultimately measured in financial terms. In most organisations, implementation involves the development of planning models, which range from the simplest (back of the envelope break-even analysis perhaps) to extremely sophisticated that meet the needs of complex organisations. Planning involves looking into the future and setting a detailed road map for the organisation to follow and thereby achieve its goals.

Anthony and Govindarajan (2007) differentiate between a budget and a forecast in the large organisation context. A budget is an annual plan that is approved by top management as a means to define organisational performance and to control resource allocation within the period specified. It has the implicit assumption that positive steps will be taken by the manager who prepares the budget, to make actual events correspond to the plan. “A forecast is merely a prediction of what will most likely happen, carrying no implication that the forecaster will attempt to so shape events that the forecast will be realised.” Later in this section, the approach taken in this research will be seen to differ from this point of view in the small business context.

The control process follows on from planning. “Control consists of procedures to determine deviations from plans and indicate corrective action.” (Davis, 1974; Davis and Olsen, 1985).

Control in systems theory is achieved via a feedback loop. “In its simplest form outputs are compared with the desired output (standard), and any differences, causes an input to be sent to the process to adjust the operations so that the output will be closer to the standard. Feedback which seeks to dampen and reduce fluctuations around the standard is termed **negative feedback**.” (Davis and Olsen, 1985).

In management theory, the plan sets the desired output or standard and the performance measurement provides the feedback loop. Management control is achieved when response to performance measurement acts as negative feedback and inputs are adjusted to ensure that the plan is achieved.

This is the key conceptual process that must be followed to ensure that the business model is successfully implemented and business success as defined by the OM is assured.

**Financial Planning and Control within the MCS is necessary but not sufficient.**

There are many qualitative aspects that contribute to business success. For example the company image that is projected to the public and to customers, the ease with which the customer can transact business (a reflection of information processing methods), the perceived integrity and quality of the product and/or service offered and its competitive edge, the skill of the company's personnel and so on.

The internal systems and procedures are important to ensure the business runs efficiently and resources are not wasted. Competitive advantage is achieved with unique processes and reliable ISs. Whilst there are many qualitative aspects to these operational factors, measures such as those of the Balanced Scorecard (BSC) (Kaplan et al., 1993; Gumbus and Lussier, 2006; Craig and Moores, 2005) and others (to be discussed later), have been developed for large organisations to assist with management control.

Whilst the business success conceptual model developed here, takes into account entrepreneurship and the qualitative aspects of implementation, the focus in this research programme will be on just two aspects – the *business model* as an expression of the strategic goals for the business and the *economic model* as a quantitative means to plan for desired outcomes and for management to exercise controls to ensure those desired outcomes eventuate.

The conceptual model, however, allows for acknowledgement of all the factors that impinge on the success of the small business. Information flows that are needed to operate an effective MCS can be both qualitative and quantitative and are part of the planner's knowledge bank required for the planning process.

### **2.1.4 A Conceptual Model for Business Success**

The small business success conceptual model in its entirety is shown in Figure 8 below. The diagram is a synthesis of research reported in papers by Morris et al. (2005, 2006); Schindehutte et al. (2001, 2008); and Porter (1985, 2001) and takes into account the discussion above.

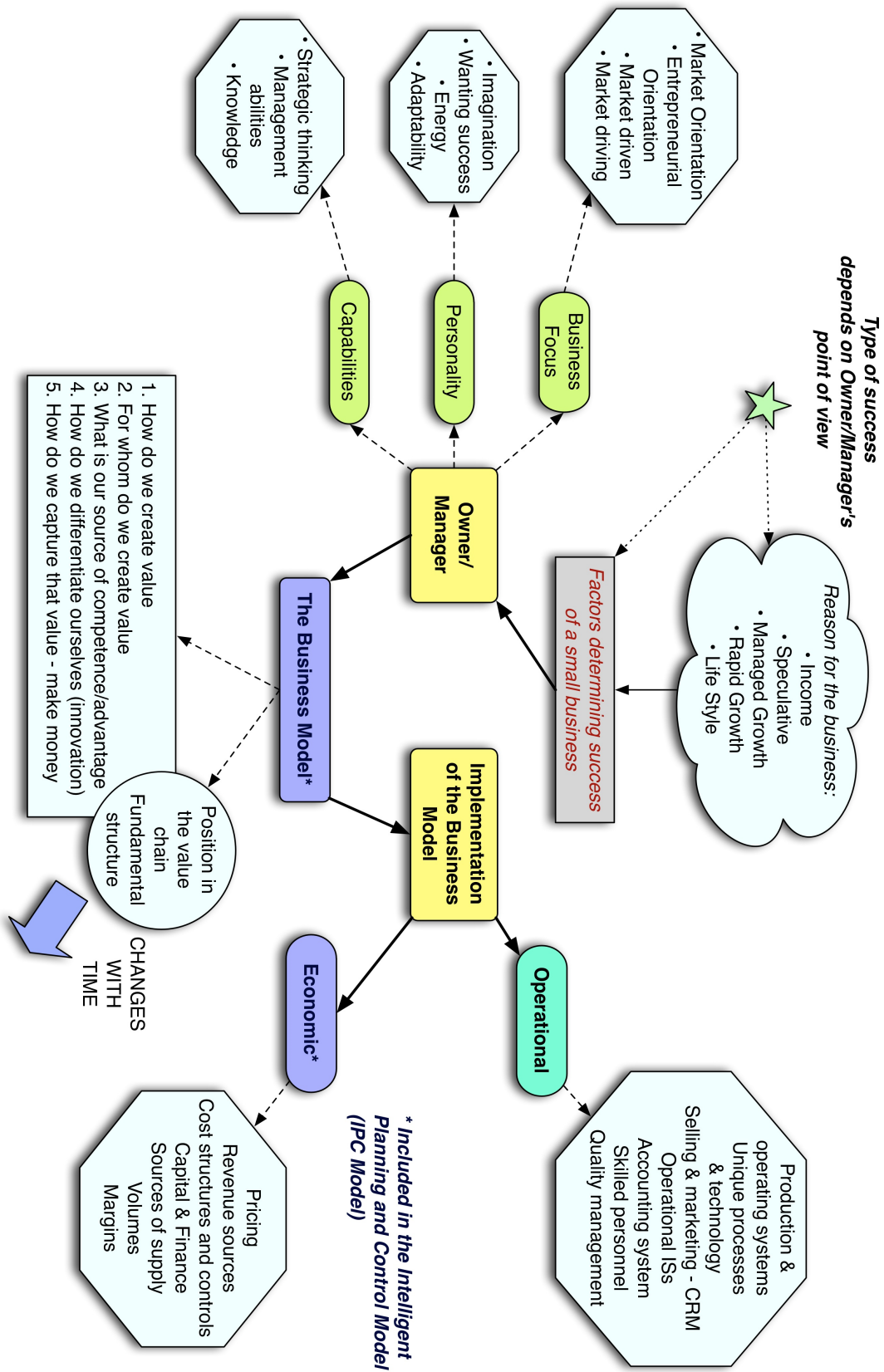


Figure 8 – Conceptual Model of Factors Affecting Small Businesses Success

## 2.2 What is a Management Planning and Control System?

In this section the function and description of a Management Planning and Control System is explored. In some of the literature the system is described in terms of a Corporate Strategic Model, a Corporate Financial Model, an MCS or a FPC system. The aim is to understand how these types of systems came about, how they are designed, how they function and what empirical evidence is available to show effectiveness and applicability to the small business sector. Through examination of the literature, principles of design for a computer based system for the small business start to emerge and these design principles are described in detail in Chapter 4.

In the 70's and the 80's as the power and availability of computers improved there was a great deal of excitement in the concept of being able to use computers to model the corporation and use such models to improve planning and control functions. (Davis, 1974; Davis and Olsen, 1985; Chenhall, 2003; Anthony and Govindarajan, 2007; Winch and Arthur, 2002). In the accounting and organisations arena, a body of work developed around understanding the mechanisms being used for management control where the efficacy of computer assistance was observed. Otley (1980) proposed the contingency theory of management accounting systems where the systems being used, evolved to suit the organisational context. In this research the context is the small business.

Traditionally MCSs relate to:

*“... how a corporation's senior executives design and implement the ongoing management systems that are used to plan and control the firm's performance. Elements of MCSs include strategic planning, budgeting, resource allocation, performance measurement, evaluation and reward, responsibility centre allocation and transfer pricing.” (Anthony and Govindarajan, 2007, p.9).*

The discipline focuses mainly on large organisations where the processes of management control are quite involved (Simons, 1991). It is argued, however, that the principles behind the MCS theory for large organisations should apply to small businesses except that the execution of the theory may need to be different. There is no reason why a software tool should not guide the process in the small business context.

The focus of past work to develop computer supported MCSs has therefore been mostly on large organisations. Computers could be used for sales forecasting, sales analysis, market analysis, inventory control, production control, pricing mechanisms, finance management and the like. All these areas of the organisation could benefit from machine assistance (Davis, 1974; Chenhall, 2003).

Such applications also apply to small business but not all will have the same degree of computerisation and the software may not need to be as complicated (Chenhall, 2003).

In the end, all data from the various data sources throughout the business find their way to the General Ledger in the accounting system and from that single source, financial plans can be made and performance can be measured. This is one of the principles of the software design described in Section 4.1.4, which follows.

In large organisations the idea to use computers for management control turned out to be a much more complex in practice. This arose because the needs and perceptions of the planning and control function within large organisations varies depending on which role you play. The viewpoints may be legal, compliance, market oriented, product oriented, production, strategic, research and development or other. Not only is there complexity derived from the functional aspects of an organisation, there is complexity when large organisations are broken into whole business units, cost centres or revenue centres. Thus not only were there different perspectives to deal with but organisational issues and methods of communication had to be addressed (Chenhall, 2003; Malmi and Brown, 2008; Brown, 2005).

Largely by the end of the 80's, there were many management control systems available that not only assisted individual sections of the business, they were also able to provide top management with insights into the dynamic nature and subtle mechanisms or drivers that were impacting on their organisations (Simons, 1994,1995; Porter, 1980). Performance measures could easily be monitored and reported to shareholders and other stakeholders in the business. With these tools the planning and control function could be more strategic in nature whilst not impinging unnecessarily on their operational nature. After this period, attention was turned to the task of quantifying and defining performance factors other than those that were purely financial (Kaplan and Norton, 1996; Chenhall, 2003; Gumbus and

Lussier, 2006; Hudson et al., 2001). There was recognition that the human factor could be integrated with the standard financial data.

Small business sat on the edge of these developments. The main progress that has been made in this sector is the general adoption of computer based accounting systems and even then, evidence suggests that this is not yet universal (Dyt and Halabi, 2007). This move has been encouraged in Australia by the need for businesses to provide quarterly Business Activity Statements (the BAS) to government as well as remitting various taxation payments either on a monthly or quarterly basis. Existing accounting software was updated to facilitate meeting these compliance requirements as well as those of a revised consumption tax (Goods and Services Tax or the GST) that replaced a wholesale tax system.

Small business, encouraged by their accountants, adopted such systems to enable them to meet their reporting requirements. With their lack of sophistication and their smallness, there has not been much emphasis placed on the development of comprehensive software based MCSs that are designed specifically for small business (Chenhall, 2003). Although there is some software available for planning and control purposes, it is not necessarily well integrated with the business' accounting system nor has it been designed specifically for the small business. Some of the software is simply a cut down version of a larger system, which can be far too complicated for the average small business. Small business tends to rely on Excel™ spreadsheets to supplement their accounting processes. This aspect is discussed in more detail with specific examples and references in Section 2.6.

The need for a software-based MCS to be integrated or at least linked with the accounting system is fundamental to the design concepts for this research (Douglas and Glen, 2000) and Section 4.1.

Kober et al., (2007) and Sandino (2007) suggest an interrelationship between management control mechanisms and strategy. The MCS can influence strategy and strategies implemented can demand changes in the MCS. Sandino (2007) describes four different categories of MCS that evolve according to the firm's life cycle stage and strategic focus. These are a 'Basic MCS' for planning, setting standards and establishing operations of the firm, a 'Cost MCS', a 'Revenue MCS' and a 'Risk MCS'. Firms that choose their MCS to be aligned with their current strategic focus perform better than others.

Management literature describes three levels of control (Davis, 1974; Chenhall, 2003; Anthony and Govindarajan, 2007; Otley, 1980)

- *Strategic planning;*
- *Management Control (Tactical planning and performance measurement); and*
- *Operational Control (Day-to-day planning and performance measurement).*

This research deals with the first two of these areas. Strategic planning and management control are not day-to-day activities. They require contemplative thought based on assessment of both internal and external conditions that impact of the organisation (Davis, 1974; Chenhall, 2003; Anthony and Govindarajan, 2007; Otley, 1980; Gerber, 2001).

The research does not deal with Operational Control as it derives from day-to-day activities in the business and tends to be short term and detailed in nature. For example, daily sales information derives from original sales transactions (sales dockets) but is distilled periodically as a total figure in one or more accounts in the general ledger. Even if there is a Point of Sale (POS) system, the sales dollar amounts are still collected and summarised in the general ledger.

Apart from transaction data there is some specialist information that is needed to aid in the functions of strategic planning and management control. In the small business these may be presented via spreadsheets. For example, product cost information or personnel forecasts.

There is no reason why such subsidiary information should not be an integral part of a software tool. However the aim of this research is to test the basic principles not to develop the ultimate comprehensive and fully integrated software package. This is a different approach to the MCSs of the large organisations.

Note that the results of the measured business performance analysis should feedback into the three levels of control above, in the form of “adaptive control behaviour”. The concept of “adaptive control” versus simply “control” will be developed further during the thesis. This principle aligns with the negative feedback loop concept that arises in classic control system theory (Davis, 1974). It is an essential part of the process that needs to be built into the software tool.



In terms of the literature, the concept for a small business software based MCS can be described as a hybrid. It can be defined as a corporate strategic model in the sense that it includes the business model and defined performance targets. It certainly needs to be able to measure actual financial performance using a series of financial ratios or measures with graphical representations of actual and predicted results. It also needs to take into account qualitative aspects of business goals. In this research the qualitative aspects are covered through the inclusion of the business model as part of the package. The design of this part of the IPC Model has been drawn from the work of Morris et al. (2006) who provide a structured approach to expressing the qualitative nature of the business model. Their precise method of defining what a business model comprises is considered by the author to have merit and is a large business concept that should be applicable in the small business context.

It is essential that the proposed small business software tool (the IPC Model) use management accounting (MA) theory in its internal algorithms. The software has many of the characteristics of a management accounting system (MAS) but it is in addition a forecasting program that includes performance measurement. With the necessary feedback loop incorporated in the design, the software facilitates the control of the business. In this regard, the model is a simplified MCS. Chenhall (2003) explains the accepted terminology.

*“MAS refers to the systematic use of MA to achieve some goal. MCS is a broader term that encompasses MAS and also includes other controls such as personal or clan controls. .... The definition of MCS has evolved over the years from one focusing on the provision of more formal, financially quantifiable information to assist managerial decision making to one that embraces a much broader scope of information.” (Chenhall, 2003, p. 129).*

The small business software tool is not specifically designed to include “other (*cultural*) controls such as personal or clan (*group*) controls” (Brown, 2005) but its use may affect such behaviour, especially in an operational sense when the need to adapt arises.

The work of Reid and Smith (2000) describe some of the empirical evidence of the contingencies that affect the design of the business’s management information systems. These authors surveyed 150 Scottish micro-firms and confirmed 3 hypotheses. Cash flow, funding shortage and innovation affected the ISs selected. The businesses studied appeared

to cluster into three firm types that were defined as “adaptive”, “stagnant bureaucracy” and “running blind” (Reid and Smith, 2000; Gordon and Miller, 1976; Miller, 1975).

This information is useful when observing the cases and their reaction to the software. It highlights the importance of not only focusing on the software but also being aware of the wider picture in terms of the business’s strategic position and overall characteristics. Later in the discussion concerning the Fitness Studio (Section 5.1), the impact of the software implementation encompasses the overall changes to the business not just the functionality of the software. To a lesser extent this principle was applied in the other cases as well.

Malmi and Brown (2008) and Brown (2005) discuss management control systems in large organisations as a “package”. Although a small business is a much simpler organisational structure than a large business, the dynamics of operation that occur in business units or profit centres within the large organisation can be similar to those in a small business. Management control principles apply equally to both organisational types with the rider that in the small business, such management controls, sometimes are simply not applied. That does not, however, mean that these techniques are not appropriate in the context (Sandelin, 2008; Nilsson, 2010).

Brown (2005) suggests (Table 1 below) a new conceptual framework for an MCS package with five key elements comprising Planning, Cybernetic, Reward and Compensation, Administrative and Cultural controls.

<b>Cultural Controls</b>						
Clans		Values			Symbols	
<b>Planning</b>		<b>Cybernetic Controls</b>				<b>Reward and Compensation</b>
Long Range Planning	Action Planning	Budgets	Financial Measurement Systems	Non Financial Measurement Systems	Hybrid Measurement Systems	
<b>Administrative Controls</b>						
Governance Structure		Organisation Structure			Policies and Procedures	

**Table 1– Management Control System as a Package (Brown, 2005)**

There is no reason why a small business software based MCS cannot be consistent with Brown's (2005) conceptual framework. It can and should be more than simply another financial modelling program.

The small business software MCS typology aligns with the Cybernetic Controls principle as shown in Table 1 above (Malmi and Brown, 2008).

Green and Welsh (1988) point out that control is usually recognised as a regulatory process only, but it is also described in cybernetic terms as:

*“ ... a process in which a feedback loop is represented by using standards of performance, measuring system performance, comparing that performance to standards, feeding back information about unwanted variances in the systems and modifying the system's comportment” (p.289)*

They go on to explain that the cybernetic perspective embodies the regulatory process, but underscores the fact that control is a dynamic process not a state.

This is exactly the principle underlying the concept of the proposed IPC Model. “Fundamentally, control is a goal oriented process ...” (Green and Welsh, 1988, p.289).

Sivabalan et al. (2009) conducted a survey of medium to large companies in Australia with 424 responses. The purpose was to examine the use of budgeting in organisations. Budgets are used widely in large organisations but are criticised mainly for their use in [staff and company] performance evaluation. The survey found that organisations regard budgets as more important for planning and control reasons than for evaluation purposes. It was also found that rolling forecasts are used in tandem with the annual budget supporting the control function. Rolling forecasts involve more frequent forecasting in order to create more accurate financial predictions. It is argued that this enables the organisation to be more competitive and responsive to change (Bogiages, 2004).

In this thesis the concept of ‘continuous adaption’ (of the predictions) that leads to ‘adaptive control’ is proposed for the small business which aligns to some extent with the concept of rolling forecasts that has been found in some large organisations. The difference is that ‘adaption’ implies action being taken within the organisation that leads to revised predictions. Better control is achieved through ‘action’. (The words ‘adaption’ and ‘adaptation’ are synonymous).

The discussion in this section is summarised here.

MCSs for large and medium sized businesses are necessarily complex related to the organisational size and structure. ISs developed to support the needs of these larger organisations need to allow for multiple users operating in different functional areas. With their larger resource base such systems (ERPs) can be supported. In the small business that is resource poor the information systems are not integrated. The accounting system is the central source of management information.

It is proposed in this thesis that an effective MCS can be developed for the small business using the principles of MCSs in larger organisations but simplifying the system to be an add-on to the accounting system only. The presumption is that the other ISs that tend to exist in the small business can remain as they are – as separate ISs that may be manually operated, operated with the use of spreadsheets or may be specialised computer based systems such as a Point of Sale (POS) system.

It is proposed that the parts of the larger organisation MCS that are applicable to the small business are:

- The Business Model
- The forward projecting Financial Model for the business;
- The integration of the Accounting System General Ledger; and
- A simplified set of key Performance Measures to provide the control mechanism.

In the next section it is necessary to explain why, even with a specially designed software tool to guide the small business management control process, there are other qualitative and situational factors that can inhibit its effective application.

## **2.3 Barriers to Effective Management Control in Small Businesses**

The planning and control function in any organisation is well recognised as an important activity. All the small business OMs who participated in this research, were enthusiastic in the beginning about having a software solution to their planning and control function. They all recognised and agreed that it was an important function for them and wanted to participate in the research. Why then did some fall by the way side?

Davis and Olsen (1985) give an excellent six-point list of the characteristics of planning as a human activity. A précis of the six points is listed here, as they are still applicable today, despite the advent of computer assisted planning and control software. They are particularly applicable for small businesses.

1. Planning is a difficult and detailed cognitive activity that takes time. Because of the cognitive strain, people avoid planning;
2. Planning makes evident the uncertainty of future events. The future may seem more uncertain after planning than before. There is a human tendency to avoid uncertainty and this may be reflected in planning avoidance;
3. A formal planning system reduces perceived freedom of action. *(This is a particular barrier for the OM who values freedom of action. The design of the research software addresses this issue, discussed in detail later.);*
4. Planning requires intensive effort and given the nature of managerial work *(and in the OM case, operational work as well)*, it is difficult to take time out for planning. This is why large organisations *(and one of the case studies!)* have retreats where all other activities are shut out in order to concentrate on planning;
5. Planning is computationally tedious. Each change in planning assumptions affects other figures in the plan. Analysis of past data and current expectations requires significant computational work. The popularity of planning software reflects the need for computational assistance in planning. *(Even with the most sophisticated software to aid the planning process, these comments are still relevant. The user still needs to understand and draw inference from the data that is generated when plans are made.);*
6. Plans are often made and then ignored. One reason they may be ignored is that they do not represent real agreement. However, if they are ignored, people become reluctant to be involved in planning.

This list concentrates on planning only. The small business software tool combines planning and control. By including control, the tool becomes more of an operational function, which should add to its relevance from an OM point of view. If it is tied to the accounting system then it is linked to the day-to-day functions of the business.

There are some other specific characteristics of small businesses that represent barriers to effective planning and control. They highlight the nature of the research challenge that exists in providing new tools to encourage improved management practices.

Beginning with the most fundamental of management tools – the accounting system – studies in Victoria, Australia of the micro and small businesses revealed that some still use manual systems or a combination of computer-aided and manual systems (Dyt and Halabi, 2007). Without an accurate and timely accounting system, it is difficult to measure performance, to gain sufficient feedback on the status of operations, to plan ahead – let alone set a longer term strategy for the growth and development of the business.

The dependence on the OM in a small enterprise has real implications for planning and control methods that are adopted. Such characteristics are generally described (Hudson et al., 2001; Winch and Arthur, 2002; Bianchi, 2002; Hamilton, 2007; Gerber, 2001). The list is as follows:

- *The OM does not have the opportunity or is not inclined to delegate authority;*
- *There are severe resource limitations to spend time on planning and control or to have the financial resources to engage consultants;*
- *The OM may not be skilled in the use of modern management techniques;*
- *OMs typically prefer to work “in” the business and not “on” the business;*
- *There is often a reliance on a small number of customers as small businesses often address niche markets;*
- *There is often a reactive, fire-fighting mentality;*
- *Small businesses have high innovatory potential;*
- *Informal, dynamic strategies are typical.*
- *Working on the business plan is seen by the OM as a bureaucratic constraint;*
- *The OM tends to focus on the “now” problems without regard for the longer term impacts of his/her decisions and actions;*
- *The accounting system is often poorly maintained and not designed around management issues, but rather around government compliance issues;*

- *The simple logistics involved in collecting past data from the accounting system in a format that is suitable for planning purposes are generally not in place.*

With these particular characteristics, the effectiveness of planning and control in a small business clearly depends on the desire and the skill of the OM in its implementation. This emphasises the importance of a particular focus on the OM in any new research in the area.

Forecasting the economic outcome of strategic positioning as set out in the business model poses a problem for most small firms. The OM has to delve into the detail of the firm's accounting system to confirm that policies in fact can materialise into profits. This is a time consuming process that requires good knowledge of accounting and the inter-relationships between capital items, direct and indirect costs, pricing, overhead costs and the like; let alone the parameters such as growth rates, seasonal variation, interest rates, pay rates, pricing policy that enable the forecasts to be made.

It is common for firms to draw up annual budgets, to analyse profitability, to carry out "profit planning" as described in John English's (2001) classic text on how to organise and run a small business in Australia. The problem with this approach is that to handle the data, OMs are inclined to over simplify the process. They may carry many of the key figures in their heads. The budget is implicit and simple. They may take the time to prepare the annual budget and then find it difficult to update the budget during the year as circumstances change.

English's (2001) approach is somewhat static in concept. The idea of carrying out a breakeven analysis is a simplistic method. It is formulated to assist the OM in understanding the business structure. The method does not bring in the dynamic, changing nature of the business nor the complexity involved nor any thought about strategic issues (Welsh, 1981).

Small businesses often run several profit centres or branches of their business in order to spread risk, but such activity adds to the complexity of data capture and analysis. It normally takes an iron discipline for the OM to measure forecasted results against actual results, then to re-forecast based on revised tactics and to do this on a regular basis – usually monthly.

## **2.4 Literature relating to MCSs for Small Businesses**

In this section a review of the literature around the topic of planning and control, MCSs and small business performance is discussed. The purpose is to seek verification that problems exist, that further work in the area is warranted and to examine the approaches that are being used to improve MCSs in small businesses. Some of the literature reports on surveys that show how small organisations implement management control and others report on the techniques being used. There is extensive empirical evidence that Formal Planning and Control (FPC) is of benefit to small businesses in assisting them to achieve their aspirations and goals. Some writers report that there is insufficient research into small businesses and that they could benefit from more attention.

As there are many definitions of a small business, some of the surveys include findings from businesses with up to 240 employees. These surveys are encompassing the SME sector according to the ABS definition. Not many studies related to the businesses that employ less than 20 persons. Nevertheless the findings reported are relevant in showing trends and characteristics amongst 'small' firms but in some instances they may not be specific to the small and micro firms being addressed in this research.

Table 2 presented at the end of the section summarises the findings from the literature survey.

### **2.4.1 FPC systems and MCSs**

FPC is interpreted here as a sub-set of the total organisational MCS. In this context it refers to the financial aspects of planning, feedback and then control. It usually encompasses the implementation of the plan and is dynamic in nature. There is a blurry distinction between FPC and MCS as often in business surveys the level of detail about the planning and control function is simply not available. Also, authors tend to use different terms for the same concept. Thus the literature review looks at various aspects of the general FPC or MCS function and the relation to business performance as well as the level of planning activity in the different developmental stages of a small business.

Start-up enterprises have special characteristics. Their smallness is expected to be temporary and the need to grow is essential for their establishment. These start-ups should benefit from appropriate planning and control techniques (FPC or MCSs) even when they are just beginning.



An Australian study of Melbourne based small manufacturing firms, validated a model that depicts three stages of development; (a) start-up, (b) renewed growth and (c) mature growth; with the formality and complexity of the planning and control function increasing with the size of firm. Firms that did not attempt to influence their internal, external and management variables did not grow (Romano and Ratnatunga, 1994).

Scott and Bruce (1987) define five stages of growth in small businesses – inception, survival, growth, expansion and maturity. Their model implies a period of crisis before moving from one stage to the next. The main purpose of the model is to be able to diagnose the firm's status in the growth cycle and then to proactively initiate the strategic planning needed to facilitate progression to the next stage.

Many authors reported that those businesses using FPC techniques tended to be the ones that were growing and were profitable. They were larger businesses (more than 20 employees) where management practices were more formally arranged (Kraus, 2006; Romano and Ratnatunga, 1994; Gerber, 2001; McMahon, 1999; Nogare, 2006; O'Neil and Ducker, 1986; Perera and Baker, 2007; Wijewardena et al., 2004). The performance of small businesses has been shown to benefit from the planning function (Ackelsberg and Arlow, 1985; Rue and Ibrahim, 1998; Schwenk and Shrader, 1993; Jones, 1982; Perry, 2001).

These studies argue against the assertion that strategic planning is only appropriate for large firms. It was noted that the activity “promotes long-range thinking, reduces focus on operational details and provides a structured means for identifying and evaluating strategic alternatives, all of which improve firm performance” (Schwenk and Shrader, 1993, p. 60).

Those firms performing structured strategic plans were more effective. Thus the level of planning sophistication is an important determinant of financial performance as well as the management education and experience of the OM (Bracker et al., 1988; Berman et al., 1997; French et al., 2004). Not all researchers agree. McKiernan and Morris, 1994 examine the issue of formality in SMEs strategic planning in a longitudinal analysis over five years. They did not find a positive relationship between the planning activity and performance directly. They noted other ‘qualitative’ factors impacting on the analysis. The interpretation of their study seems to indicate that some of the sample firms were

not able to implement their strategies effectively. Mintzberg (1994) cautions that planning can be overdone, incorrectly done and can be ineffective.

Brinckmann et al. (2010) conducted a meta-analysis of 46 studies on a total of 11,046 organisations comprising both new and established small firms. The purpose of the study was to provide evidence towards the debate about the value of business planning as an entrepreneurial activity. Two distinct schools of thought provide a theoretical foundation for the effects of business planning in firm performance: the planning school and the learning school (Wiltbank et al., 2006; Brews and Hunt, 1999). Those researchers belonging to the planning school “propose that business planning is crucial for the survival and development of both new and established small firms” and that a “formal approach leads to superior venture performance”. The opposing group belonging to the learning school propose instead to “focus on learning, strategic flexibility and controlling resources, especially when facing high degrees of uncertainty” (Brinckmann et al., (2010), p.24).

Thus entrepreneurs “could engage in extensive business planning or *just storm the castle* by rallying resources together, orchestrating an immediate offering and hustling for a first customer” (Brinckmann et al., (2010), p.24).

In the paper, Brinckmann et al. (2010) proposed four hypotheses, which were:

***Hypothesis 1:*** Business planning in small firms increases performance;

***Hypothesis 2:*** Business planning increases performance more in established small firms than it does in new small firms;

***Hypothesis 3:*** The outcome of business planning has a greater effect on firm performance than on the business planning process;

***Hypothesis 4:*** Business planning has a greater effect on firm performance in cultures with low uncertainty avoidance than it does in cultures with high uncertainty avoidance.

The meta-analysis confirmed all hypotheses except number 3.

The conclusion from the study was that despite the substantial resource restraints that are experienced by small firms, planning was shown to generally be a value creating activity. There was a significant positive effect between business planning and small firm success.

A conclusion from the study was that the authors suggested a concomitant approach to planning, learning and doing. They describe the activity of planning as “sense-making and learning” (understanding the dynamics, drivers of the business), which should not interfere with “value creating activities” (operational activities) that can be carried out at the same time.

This lines up with Schindehutte and Morris (2001); Schindehutte et al., (2008) on the role of the entrepreneur in the small business context. The learning aspects and market driving behavior line up with the feedback concept in the software based MCS. A planning process by itself is not beneficial unless the built in control mechanisms via feedback are used as a guide to improving value creating activities and resource control.

Gibson and Cassar (2002, 2005) investigated the causal relationships between planning and performance utilising an Australian ABS longitudinal database with responses from 2,956 businesses over a four-year period. The results confirm the association between planning activity and performance but they cast doubt on the causal sequence of the association. The study suggested that the use of formal planning does not necessarily precede superior performance. It does suggest that businesses that are better performers are more likely to use business planning. Of relevance to this research is the fact that quite large firms with up to 200 employees were included in the database. What is also significant is that of the 2,956 respondents only 16.3% were regular planners and 43.5% were non-planners. The remainder were sporadic planners. This is really a revealing statistic. A large majority of SMEs in Australia do not plan consistently or not at all.

What is missing from the study is information about what kind of planning was being carried out by the planners. Were they static business plans or dynamic plans that change with firm experience? Were the business owners regularly reviewing their financial results each month and making assessments of performance based on their management accounting data? If they were, then they were probably doing some planning and certainly were monitoring their performance. The other area not known from the study is the quality and complexity of the MCS being used in the firms.

Mazzarol et al., (2008) surveyed a sample of 204 OMs that had indicated their desire for growth. Those that had formal business plans were found to have stronger network partnerships, more formal quality assurance and a clearer strategic vision that was effectively communicated to employees and others. The presence of a strong personal

vision of the OM was linked to high annual sales turnover. This finding emphasises the importance of the entrepreneurial characteristics of the OM as well as attention to strategic planning, contributing to the success of a small firm.

Akroyd and Kober, (2010) conducted a retrospective longitudinal study on the emergence and utilisation of MCSs in a high growth firm. They investigated at what stages in the firm's life cycle various control mechanisms were introduced, the manner in which they were used and the impact that these measures had on the firm's growth. The study spanned five years from start-up in 2003 until the end of 2007. Chenhall (2003) has noted that the role of MCS in firms who experience rapid growth has yet to be explored. This is probably true for the small businesses as defined in this research.

Akroyd and Kober's (2010) findings contrasted markedly with prior MCS based research and experience-based models that find internal controls and diagnostic financial controls to be the first control categories adopted by young firms (Davila, 2005; Davila et al. 2008, Sandino, 2007; Simons, 1995). This finding is qualified by the internal reasons for MCS adoption being event triggered or predominately of a reactive nature in a *learning* and *chaos* environment (Davila and Foster, 2009; Simons, 1995).

Akroyd and Kober's (2010) found that belief systems (statements of vision, core values aimed at motivating everyone involved) were the first control systems to be implemented and then these were constantly reinforced. The belief systems tended to compensate for the lack of internal control processes. Growth preceded the introduction of formal financial controls as found in the Mazzarol et al., (2008) case above. Even when the firm implemented the financial controls and used them in a diagnostic manner, there was still an implicit link to the belief systems.

These two studies do not address the level of OM knowledge about the effectiveness of intelligently applied financial controls early in the life of the firm. It could be argued that the Akroyd and Kober (2010) case experienced consistently high sales growth in the early years that masked their lack of control systems. However, the contingency perspective of MCS implementation explains these findings (Brown, 2005; Otley, 1980). A firm adopting a high growth strategy would not place emphasis on budgets and cost controls (Chenhall and Morris, 1995; Dent 1990). The type of MCS implemented over time is linked to strategies and culture that develops as the firm grows.

This concept is repeated in the IT/IS world. Many theories that are looking for a link between IS use and firm performance note that the ISs adopted by a firm are contingent upon an alignment with the strategic goals of the firm. Other contingencies revolve around organisational and environmental conditions (Palmer and Markus, 2000).

In this research the proposal is to introduce another level of IS sophistication using the existing MCS infrastructure in the small business. Palmer and Markus (2000) looked at the use of various levels of the Quick Response software program in specialty retailing firms in the US. “The Quick Response program consists of four levels of successively more sophisticated technologies and applications. Level 1 includes point-of-sale (POS) technology and price lookup. Level 2 includes automatic inventory replenishment and sales and inventory forecasting. Level 3 includes pre and post season planning and support for cross-docking. Level 4 involves season-less retailing and the transfer of inventory management functions to suppliers.” (p.242). *(Author addition: By way of explanation: **cross-docking**, means receiving goods at one door and shipping out through the other door almost immediately without putting the goods into storage. **Season-less** means those stock items for which there is no significant variation in periodic sales volume attributed to the seasons.)*

They found a positive relationship between use of the IS at the first level and firm performance but the results were indeterminate when more sophistication was added. The difference in this example is that the type of IS evaluated in their study was addressing operational aspects of the business whereas the IPC Model developed for this research is economic in nature looking at business performance in aggregate rather than at a transactional level.

## 2.4.2 The Business Plan

In this section a distinction is made between the business plan, defined as the static document prepared from time to time for external parties or for internal purposes and the business model described earlier.

Traditional business plans tend to be compiled as a largely descriptive document with a long-term, five year budget at the beginning followed by a shorter-term budget (monthly or quarterly) at the end. The document is used to communicate the viability of the business to stakeholders, external parties such as banks, investors and the like. These

plans are not generally integrated with the accounting system and are not usually used for control purposes (Anthony and Govindarajan, 2007).

Business plans of this nature are also used to set the annual budget (Orlando, 2009) but unless they are integrated in some way with the monthly accounting records, the essential feedback loop for control is missing. This is probably the reason that this type of plan is often shelved after it is produced and accounts for the observations that a large number of small firms do not have formal written business plans (Richbell et al., 2006; Gibson and Cassar, 2005; Bracker et al., 1988; Bowen, 2003).

The review showed evidence to suggest that traditional business plans were often only produced occasionally or when capital raising became necessary. Business plans tend not to be an integral part of on-going operations especially in start-up entrepreneurial businesses (Cassar and Gibson, 2007; English, 2001; Hamilton, 2007, Castrogiovanni, 1996). Lange et al., (2007) found in the case of 116 new ventures that there was no difference between the performance of new businesses with or without a business plan before launching.

The characteristics of the OMs, influence whether or not those firms have formal, written business plans (Richbell et al., 2006). This study drew data from 70 small metalworking firms in Sheffield, UK. Only 46% had formal written business plans. The time span for the plans were mostly over three (28%) to five (25%) years and one year (25%). Antecedent influences on OMs showed a significant association with the possession of a business plan. These OMs were above average level of education, with previous work experience in a large firm before starting their own firm and running firms in sectors outside of their previous experience. OMs with growth orientation had a positive association with the possession of a business plan.

There is ample software available via the Internet to assist with preparing a business plan. An example is the offering from Business Resource Software Inc. (online). The software is directed at the small business, has extensive descriptive capability and includes an expert system capability to analyse the consistency and validity of the plan created by the user. This software is described in more detail in Section 2.6.1.

Universities around the globe teach students about the importance of preparing business plans and how to write them. A study of the top 100 business schools in the US finds

that 78 schools offer courses on business plan preparation (Honig, 2004; Brinckmann et al., 2010).

*In conclusion a business plan is not an MCS as it does not address the necessary feedback mechanism where actual results are compared to the plan.*

### **2.4.3 The Business Model**

Traditional business plans require a facility with business concepts such as being able to describe products and services, industry and market analysis, competitor analysis, description of management capability, SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis, a financial plan or budget, risk analysis and other similar inputs. Many of these concepts are strategic in nature and require time and effort to compile into a plausible document (Anthony and Govindarajan, 2007; English, 2001).

A rather more short hand method for expressing the strategic position and goals of the small business is the business model described earlier in Section 2.1.2 and included here for completeness of the review (Morris et al., 2005, Morris et al., 2006; Shafer et al, 2005; Kleindl, 2000; Mitchell and Bruckner-Coles, 2004; George and Bock, 2010).

In a planning and control context, the strategic raison d'être of the business – its fundamental business model - is normally an essential starting point of the business plan. Fiet and Patel (2008) define a “forgiving” business model that is characteristic (and recommended) for new ventures. This changing business model is necessary to enable response to the normally dynamic nature of the new venture environment.

The method used by Morris et al. (2006) to describe the business model has been adopted as part of the IPC Model and will be discussed further in Chapter 4.

*In conclusion, a business model is not a business plan nor is it an MCS. However it is argued in this thesis that it is a necessary component of an effective MCS.*

### **2.4.4 Financial Models**

A financial model is usually developed as a means to forecast financial outcomes under different scenarios or assumptions. It differs from the annual budget, which traditionally, is the top management approved resource allocation and profit prediction for the coming year. Once agreed and approved, the budget is the static interpretation of

the business's expected performance for the coming year (Anthony and Govindarajan, 2007).

Typically, the Management Accounting System (MAS) forms the basis of the financial model. However a comprehensive model may include such algorithms that consider the probability of assumptions eventuating as well as allowing for time effects between periods. In the latter, an example is the time lag that occurs between making a sale and collecting the money or consideration of productivity levels for new staff that build up over time as the staff learn to execute their tasks more efficiently (Winch and Arthur, 2002; Saunders, 1975).

Financial models also take into account the time value of money in calculating the effects of lending requirements for capital projects. They will normally calculate ratios of performance for various items in the financial reports (Anthony and Govindarajan, 2007; Vatter, 1971).

In the literature survey, it was clear that financial models and accounting systems were necessary, but tended to be backward looking and certainly were not sufficient in themselves to ensure sustainable success for the small business (McMahon, 1999; Perera et al., 2007; Dyt and Halabi, 2007).

#### **2.4.5 Performance Measurement**

The area of performance measurement is well covered in the literature with particular interest in the application of various measures to small businesses (Kaplan and Norton, 1993; Gumbus and Lussier, 2006; Hammer et al, 2007; Hudson et al., 2001; Tapinos et al., 2005; Baard and Watts, 2006). All authors commented on the problems associated with applying the performance measurement practices of large organizations to their smaller counterparts.

Murphy et al. (1996) provide an analysis of publications for the seven years to 1993 noting that performance measurement is critical to understanding new venture and small business success or failure. In 51 articles studied they found 71 different operational performance measures that they group into eight major dimensions of which efficiency, growth and profit are most frequently used. Most measures are predominately economic. For example efficiency may be expressed as profit or sales per employee or labour expenses as a proportion of sales.



Van Gelderen et al. (2000) seek to combine personal and economic success into a total success score including turnover, profit, personnel, personal income, goal reaching and subjective success. OMs that perform poorly are seen to adopt a 'Reactive Strategy' with the poor performance leading to increased use of the reactive behaviour. High performing OMs start out focussing on the most critical issues and employ a 'Complete Planning' approach. The Complete Planning approach is used less frequently in a fast changing environment.

Chenhall and Langfield-Smith (2007) note that there is a proliferation of approaches to the development of performance measures in large companies that go beyond the basic management accounting measures. These cater for the various functional areas of management in both financial and non-financial areas. The most important concept from the review is that the effectiveness of a performance measurement system depends on how they affect individuals' behaviour. There was a criticism that budgetary systems in large organisations can be dependent on how managers use performance measures. Measures against budgets can be inflexible, bureaucratic, internally focussed and backward looking. These are features that can be avoided in the design of a performance measurement system for the small business owner.

The BSC performance measurement system (see earlier) and similar systems illustrate why a new approach is justified for the small business. In order to implement performance measures or benchmarking, there must be an underlying FPC or MCS within the business otherwise the measures cannot be made.

The area of performance measurement is important, as it is the end result of the planning/implementation cycle and is the trigger that introduces the control part of the cycle. This is why research in the performance measurement and benchmarking areas is discussed in more detail here.

Kaplan and Norton (1996) first introduced the BSC in 1990 through a one-year study of 12 companies. The work has had a significant impact on management practices since that time. A recent survey found that approximately 50% of Fortune 1000 companies in the US and 40 percent in Europe use a version of the original BSC (Gumbus and Lussier, 2006). It is also taught at Universities as part of learning about MCSs (Anthony and Govindarajan, 2007).

The system is based on a framework that considers four main perspectives in the firm; financial, customer, internal processes and learning and growth. The idea is that the critical success factors developed for each area are “balanced” between long and short term and internal and external factors. Thus the system is quite strategic in nature, is forward looking and impacts on management practice.

Within each perspective, the user sets desired objectives and for each objective, devises a method for measurement. Then targets are set for each objective using the defined measure. It is significant that the BSC system caters for both qualitative and quantitative performance measures.

Little research has been carried out on the use of the system in small businesses. A case study of three firms (Gumbus and Lussier, 2006) that were defined as being small by US standards, (42, 230 and 150 employees respectively) has been undertaken recently. The conclusions were that the method needs to be tailored specifically to a particular organization and that the exercise needs the assistance of a facilitator. The main benefit of the system was to stimulate thinking and to improve communication between different parts of the organization. Thus the application of BSC techniques should be a team-based, on-going process.

This study is a perfect example of a method designed for large organizations not really being appropriate for the small business where one person (the OM) sets strategy and makes most of the decisions. On the other hand, when a firm has 10 or more employees, specialisation by function will be occurring and then, the principles behind the method may be appropriate and useful.

In Australia, Craig and Moores (2005) conducted an action research study of an established family firm using a slightly modified version of the BSC system. The case study firm employed 100 persons and operated 15 kitchenware shops throughout Queensland. Each perspective of the BSC was expanded to include an objective known as “familiness” where long term wishes of the founding generation were considered, together with matters relating to succession. Whilst there was every indication that the method applied to this family firm was successful, it was a well-established firm at the large end of the SME scale. It would be interesting to review the status of the BSC process after one, three and five years to see if the detailed process is still being applied in the day-to-day life of the firm. The argument in this thesis is that the BSC process is

far too time consuming to appeal to an OM and that the need to use a facilitator is a disadvantage.

There are many other performance measurement systems similar to the BSC. A study by Hudson et al. (2001) seeks to answer the question whether current performance measurement (PM) systems are appropriate for SMEs noting that the literature at the time was inadequate in respect of the SME context. Hudson et al., (2001) identified nine other performance measurement methods and compared them with the BSC.

The research was useful in that it illustrated the considerable barriers that exist in SMEs in dealing with, what they consider to be, esoteric, strategic matters. With all the techniques discussed and observed, the methods appeared to be static in nature rather than being part of the SMEs operational planning and control cycle. This fact was pointed out in the conclusion to the article where Hudson et al., (2001) recommended, that the performance measurement methods for SMEs, need to be iterative in nature in order that the strategic relevance of them is maintained.

Tapinos et al. (2005) found that performance measurement generally in organisations is one of the key factors in strategic planning, playing a critical role in translating strategy into action, as well as playing a supporting role in the development of strategy. In SMEs the entrepreneurial character of the OM was more dominant in determining organisational strategy than performance measurement. This conclusion arose from Hudson et al.'s (2001) findings that the majority of SME's did not have a formal feedback mechanism in place.

Franco and Bourne, (2003) explain this dilemma through the limited abilities of SMEs to have "data processes and information technology support" that allow them to "manage through measures". Their concern is to investigate how performance measurement systems (when put in place) are being used in organisations and in this case, in small businesses.

This aim is analogous to the enquiry of this research where the case studies should reveal how the user reacts to the performance measurement system built into the software tool and whether the feedback is used to develop new or revised strategy or tactics.

Franco and Bourne, (2003) noted the importance of "culture" in the use of performance measurement systems. This is of particular interest in the context of this research where

emphasis is being placed on using a simplified set of key performance measures aimed at the perceived needs of the OM (or OM team) in the small business environment.

Whilst Hudson et al. (2001) showed the difficulty in implementing performance measurement within the SME, Hammer et al. (2007) defines seven factors that make performance measurement unreliable if improperly defined and implemented. Marc et al. (2010) found that small firms only implemented a BSC or similar 'integrated performance management system' if they were large for the size group and had knowledge about contemporary management tools. In their survey 50% of non-users were not familiar with the concept and 18% were concerned with high implementation costs. Thus, in designing a model for the small business, the development of appropriate performance measures within the planning and control system must be carefully considered.

#### **2.4.6 System Dynamics**

An innovative method of planning using the technique known as system dynamics - developed by Forrester, 1961 in his landmark book, 'Industrial Dynamics' – is used to simulate the dynamics of the small business and forward project outcomes under differing scenarios. Specific work has been directed to the small business sector where the concepts of applying parameter driven, generic models to specific cases and linking the simulation model to the accounting system within the firm, have been tried with some success (Winch et al, 2006, Bianchi, 2002).

The concept behind this simulation technique is to address particular needs that arise when businesses are faced with rapid change. In these instances, the simulations can assist the OM to understand the dynamics involved in the change process and to rapidly test different strategic scenarios (Bianchi, 2002; Bianchi and Winch, 2006; Morecroft, 2007; Saunders, 1975). Whilst simulations are not sufficiently detailed for operational purposes, they are a useful pre-cursor to the detailed plan development. Simulation techniques do not appear to be particularly applicable to the smaller of the SMEs whose businesses are often dynamically simple in structure. In fact, there is even discussion as to how such simulations should be validated, as their link to day-to-day processes is rather tenuous (Coyle and Exelby, 2000).

Where a business is undergoing rapid change such as entering the export market or expanding its retail outlets, business system dynamics simulation techniques have been

successfully applied to aid OMs understanding of the dynamics and drivers involved. The tool is useful for allowing clear visualisation of strategic alternatives during the change process (Bianchi, 2002; Winch and Arthur, 2002; Winch and Bianchi, 2006). However, such techniques are best delivered via consultants, who work with the OM to create a model specifically for the cases being evaluated.

In Italy, poorly managed businesses have been described as “dwarf” or “stunted”. The phenomenon is referred to as *nanismo aziendale* or business dwarfism – a subject that is of political and socio-economic importance in that country. System dynamics simulation models have been developed that modelled the behaviour of the ebb and flow of strategic assets that are attributed to limiting growth potential (Bianchi and Winch, 2006). The concept described in the paper was to provide a generic systems dynamics model that assisted OMs in understanding the reasons behind the no growth phenomenon.

#### **2.4.7 Benchmarking**

Linked to the area of performance measurement is benchmarking. A fully implemented expert diagnostic system has been developed to compare the performance of similar SMEs in a comprehensive way (St Pierre et al, 2006). With data collected from hundreds of SMEs in Canada, the research results showed that benchmarking allowed these firms to improve their operational and financial performance. The reports produced from the SME database included advice concerning short-term actions to be undertaken to modify management practices. The benefits of benchmarking were apparent. The article alludes to the fact that firms were eager to find out how they perform against others in their industry.

The authors commented that traditional performance models for large enterprises do not apply well to SMEs. Successful benchmarking of SMEs in this case indicates similarities that lead to the concept of a generic framework for performance evaluation.

There was some concern that the data required to effectively carry out comparisons may not be available from the smaller of the SMEs. This concept, however, is seen as an opportunity for future work related to this research programme (Chapter 8).

The last two areas in Table 2, the Use of Business Advisers and the Use of Intelligent Software are related to the tools that small firms may use to effect planning and control functions.

### **2.4.8 Use of Business Advisers**

One option is to seek assistance from external advisors. Empirical studies have shown that OMs perceive the use of consultants as being an expense that they cannot afford. Interestingly, they do make use of family members and business associates for advice (Berry et al, 2006). It is also interesting to note the prevalence of business coaches that tend to service the small business sector. These coaches offer a less expensive, more standardized approach that appeals to the smaller business (ActionCoach, 2011).

Firms benefit from the interaction with ‘outsiders’, who become involved with the planning effort, preferably on a regular basis. Outsiders can be consultants, lawyers, accountants, bankers or the board of directors. The role of outsiders suggests a specific difference in strategic planning in large versus small firms where OMs can benefit from the interaction with others to supplement knowledge about strategic planning techniques and encourage commitment to the task (Robinson, 1982).

### **2.4.9 Use of Intelligent Software**

The other option is to use software that could be described as being intelligent (Business Resource Software, 2011; Cognos, 2011; Dyt and Halabi, 2007; Hamilton, 2007; Hebert and Bradley, 1993; Shin, 2006; Temtime et al., 2003).

Whilst there is excellent software available for large businesses, the sophistication is not warranted in the small business. Such software is likely to be perceived by the OM as being too complex to use and unnecessary. Small businesses often use simple manual systems that are quite effective (Dyt and Halabi, 2007).

The empirical evidence from the sources referenced above showed that small businesses tend to be quite unsophisticated in their use of software tools. This was also found to be the case with the use of general operational software as reported in Section 2.7 that follows.

### 2.4.10 Summary of Planning and Control Literature

This literature review shows that there is a research gap in addressing the planning and control needs of the small business. Not only is the group diverse in size and structure but, small businesses have particular characteristics that appear to be negatively disposed to the discipline of the planning and control function. The challenge, therefore, is to find innovative methods and/or tools that enable the function to be carried out easily and effectively.

Table 2 below summarises the literature reviewed in this section.

No.	Research Area	Comments	References
1	FPC Systems and MCSs.	<p>Empirical evidence shows that successful, growing businesses and those in latter stages of growth cycle tend to use increasingly more sophisticated versions of FPC and MCSs.</p> <p>There is emphasis on the importance of a cyclical, systematic approach to management being a key success factor.</p>	<p>Kraus, 2006; Romano and Ratnatunga, 1994; Scott and Bruce, 1987; Gerber, 2001; Kraus, 2006; McMahon, 1999; Nogare, 2006; O'Neil, 1986; Perera et al., 2007; Ackelsberg and Arlow, 1985; Rue and Ibrahim, 1998; Schwenk and Shrader, 1993; Jones, 1982; Perry, 2001; Wijewardena et al., 2004; Bracker et al., 1988; Berman et al., 1997; French et al., 2004; McKiernan and Morris, 1994; Mintzberg, 1994; Brinckmann et al., 2010; Wiltbank et al., 2006; Brews and Hunt, 1999; Schindehutte et al., 2001, 2004; Gibson and Cassar, 2002; 2005; Mazzarol et al., 2008; Akroyd and Kober, 2010; Chenhall, 2003; Davila, 2005, 2008; Sandino, 2007; Simons, 1995; Davila and Foster, 2009, Brown 2005, Otley 1980; Palmer and Markus, 2000.</p>
2	The Business Plan	<p>Tends to be static, highly descriptive, financial data is often optimistic, not usually integrated with day-to-day operating systems.</p> <p>Often developed for external parties.</p> <p>Relationship between use of a business plan and firm performance is not established.</p>	<p>Olando, 2009; Richbell et al., 2006; Gibson and Cassar, 2005; Bracker et al., 1988; Bowen, 2003; Cassar and Gibson, 2007; English, 2001; Hamilton, 2007; Castrogiovanni, 1996; Lange, 2007; Honig, 2004; Brinckmann, 2010.</p>

No.	Research Area	Comments	References
3	The Business Model	<p>A strategic conceptualisation of the entrepreneur's view of the enterprise's unique value proposition and its competitive advantage, both of which translate into how sustainable profits are generated.</p> <p>Successful implementation of the business model is key to firm performance.</p>	Morris et al, 2005,2006; Shafer et al, 2005; Kleindl, 2000; Mitchell, 2004; George and Bock, 2010; Fiet and Patel, 2008.
4	Financial Models	Financial models alone, whether static or forward looking are not sufficient to ensure successful growth and development.	Anthony and Govindarajan, 2007; McMahon, 1999; Perera et al., 2007; Dyt et al., 2007.
5	Performance Measurement	There are a variety of schemes that incorporate both quantitative and qualitative measures, but there appears to be a discontinuity between current theory and the requirements of OMs in small businesses.	Kaplan et al., 1993; Gumbus and Lussier, 2006; Hammer et al., 2007; Hudson et al., 2001; Tapinos et al., 2005; Baard et al, 2006; Murphy et al., 1996; Van Gelderen et al., 2000; Chenhall and Langfield-Smith, 2007; Kaplan and Norton, 1996; Anthony and Govindarajan, 2007; Gumbus and Lussier, 2006; Craig and Moores; 2005; Hudson et al., 2001; Tapinos et al., 2005; Franco and Bourne, 2003; Hammer et al., 2007.
6	System Dynamics (SD)	SD techniques depict the dynamic nature of the small business and have been used to assist with strategic planning. Parameter driven, generic models have been developed and tested. SD used to explain reasons for "stunted" or low growth firms. Simulation of business systems have been used as a learning tool.	Bianchi, 2002; Bianchi and Winch, 2006; Winch and Arthur, 2002; Winch and Bianchi, 2006; Coyle and Exelby, 2000; Forrester, 1961; Morecroft, 2007; Saunders, 1975; Winch et al., 2002, 2006.
7	Benchmarking	There are many factors to consider when measuring and comparing performance between SMEs. Intelligent systems have been developed, but human intervention is still required. Successful benchmarking of SMEs indicates similarities that lead to the concept of a generic framework for performance evaluation.	St Pierre et al, 2006.



No.	Research Area	Comments	References
8	Use of Business Advisors	Empirical research suggests that SMEs make little use of outside help except for that of their accountants and sometimes social networks.	Berry et al, 2006; Robinson, 1982; ActionCoach (online), 2011.
9	Use of Intelligent Software	Planning software was static and not integrated with other operations. Business intelligence refers to information retrieval and analysis. Comprehensive software is costly. Empirical studies reveal software usage limited to accounting only. Smaller companies may still use some manual methods.	Business Resource Software, 2011; Cognos, 2011; Dyt et al, 2007; Hamilton, 2007; Hebert and Bradley, 1993; Shin, 2006; Temtime et al, 2003.

**Table 2 - Summary of Literature relating to Planning and Control for Small Businesses**

## 2.5 Should the Software Tool be “Intelligent” or “Expert” or Neither?

In academic literature the word “intelligent” is used interchangeably with the word “expert” to describe software systems. “Expert” systems incorporate algorithms that mimic the expert knowledge found in the professions, such as in medicine and law and in this case, business management. Where judgement and experience are needed, the computer “expert” system provides decision support. Metaxiotis and Psarras, (2003) provide an excellent overview of the field known as “expert” or “knowledge based” systems. These authors describe “an explosion of interest” in the field in the past twenty five years with applications in “many aspects of our social life”. By 1989 over half of the Fortune 500 companies had invested in expert systems as a means to acquire the tools needed to maintain their competitive advantage.

Whilst expert systems require well-developed knowledge bases, intelligent systems as described by Simić and Simić, (2007) concentrate on the analysis of extracted data and in this case, the area of interest was business related forecasting. Their example used detailed historic data on invoicing versus the payment of the invoice to develop predicting algorithms. The work was based on a particular case study, but serves to illustrate the type of approach that could be applied in this research. However, it is not intended to enter the

complex area of “artificial intelligence (AI)” where the computer program has the ability to “learn” from data inputs and calculation experience.

Hebert and Bradley (1993) define expert computer systems as those “*that are designed specifically to emulate the reasoning of an expert*”(P. 23). The inference in their use is that the OM’s routine decision-making processes could be available to employees via an expert system. The concept is that the OM, after implementing the expert system (that mimic’s his/her own knowledge), is able to free up time to transition from “doing to managing” the business. In this case, the focus was on operational systems in contrast with this research’s focus on strategic issues, forward projections, performance evaluation and a control process. The “intelligence” is built-in by means of calculating algorithms that save time and prompt the OM with ideas to assist with the planning processes and assessment of performance.

In addition, the IPC Model may play a pedagogical role for OM. The act of planning via the computer interface forces the OM to think about the business and make decisions. If repeated regularly, with feedback from actual results that are compared with prediction, the management skills of the OM could be enhanced (Kamler and Thomson, 2006).

The reason for building in “intelligence” is to address the issue of the small business OM not having the skills, time or knowledge to effectively deal with management accounting, forecasting and strategic issues that are necessary to ensure the ongoing success of the enterprise. The degree of “intelligence” able to be built into a MCS model is not known and is the reason why the research is necessary. Not only does the level of “intelligence” need to be determined but, the context in which the software will be used is of paramount importance.

Much of the software that is available on the market for such purposes is highly sophisticated, expensive and inappropriate in the small firm environment. Finding the balance between sophistication and usability is an important element of the research.

There is a body of knowledge in the literature known as “*business intelligence*”. The business intelligence guru, Ralph Kimball defines business intelligence as “a generic term to describe leveraging the organization’s internal and external information assets for making better business decisions” (Kimball and Ross, 2002, p393). This is akin to knowledge management (Wong, 2005) where the business systems allow for information flows from both internal and external sources that assist with day-to-day tactics. Information is pulled

via pre-programmed or ad hoc queries from the “warehouse” of data and its analysis adds to the understanding of how the business is operating.

This type of “intelligence” is not what is meant in this thesis, although the concepts used to set up a data warehouse using dimensional modelling are applicable. The only difference is that reliance on General Ledger data via the company accounting system means that the data source is, to some extent, pre-processed. In true data warehousing applications, the idea is to reference the data in its most basic form. For example, the original transaction for purchasing a product – quantity purchased, date purchased, which product, which location and so on. Data warehousing methods talk about the “graininess” of the data and this is important for information extraction, where there is a need to “drill down” within a data set to obtain more detailed information about a particular problem area in the business.

In the small business context the data warehouse exists but not in an ordered fashion. The data is probably available but from many different sources some of which are manually produced documents, different software sources such as spreadsheets, text documents, the accounting system, the POS system, the production control system and similar. A data warehouse would be advantageous to the small business no doubt, but how it could be implemented at an acceptable cost in the small business context is not known.

## **2.6 Other Software Tools for Planning and Control**

This section reviews other software that can generally be described and management software some of which may be suitable for planning and control in small businesses. Some examples of software suited to larger organisations are included in the survey to indicate the different design principles between small and larger organisations. The survey is not meant to be exhaustive, but is sufficient to give a fair indication of where the research IPC Model sits in the market for similar products, but more importantly, it shows that there is a definite gap in catering for the planning and control needs of the small business.

The extant software is compared in this section without explanation as to why the detailed features of the IPC Model are the same or different.

The reason for this is that the specific design characteristics of the IPC Model are not revealed until Chapter 4. It is therefore possible in Section 4.9 to compare the key design similarities and differences between the IPC Model prototype and the relevant systems

described here. Those systems that are not similar to the IPC Model are not compared in Section 4.9. Finally, the analysis in Section 4.9 indicates by inference the areas where the IPC Model is novel.

The design principles that underlie the IPC Model are described in Section 4.1 and summarised in Section 4.1.4.

### **2.6.1 Plan Write® Expert Edition**

This software package was chosen for review because it includes expert system elements that are interesting. Amongst several versions of the software, the most fully featured version offered is known as Plan Write® Expert Edition (Business Resource Software, 2011).

Drawing information directly from the website the program is reported as being designed to help enterprises write a business plan.

*“Your answers to the interview questions are compared against a Knowledge Base of proven principles of business success. The Knowledge Base is a combination of the business models published by 100+ marketing strategy experts, such as:*

- *Michael Porter’s Five Forces Model;*
- *Competitive Advantage;*
- *Boston Consulting Group Matrix; and*
- *GE Business Screen.” (online, Business Resource Software)*

The expert system evaluates the business model in areas such as:

- *“Identifying Strengths and Weaknesses;*
- *Demonstrating Industry Strength;*
- *Revealing the organisation’s Competitive Advantage;*
- *Recommends Marketing Position;*
- *Suggests Growth Strategy;*
- *Confirms the Investment Opportunity; and*
- *Includes an MBA (Master of Business Administration) Wizard™.”(online, Business Resource Software*

This program is not an MCS. It does not include a link to the organisation's accounting system nor does it allow for progress monitoring of financial status on a monthly basis. However, the program does allow the user to enter past financial data and the forward projecting financial reports are generated. Past data can be imported from QuickBooks® to assist the user with forecasting. Financial projections can be entered directly or by moving points on a chart or by setting a growth rate. This is an excellent feature and would be desirable to be included in a more advanced version of IPC Model. (The model developed for this research is a prototype for proof of concept having a developmental time constraint).

There is a milestones action plan and personal assets and liabilities statement. All is designed to submit to bankers and investors.

A "Plan Audit" feature checks for inconsistencies in the data entered and guides the user to correct the problem. This is an expert system. It is a feature that could be developed further in more advanced version of the IPC Model.

This is an example where intelligence built into the software enhances its usability without the appearance of being too complex. It is a feature that applies to businesses of all sizes.

In Section 4.2 where the design functionality and structure of the IPC Model is described, the comparison of plan using the six monthly forward trend to the target parameters was influence by the plan audit feature in this particular software. It is not the same but does include a check on the validity of the user's forward projections.

PlanWrite® provides a method to check key financial figures and ratios with the average in the user's industry (benchmarking). Users select from a main industry list and then a sub industry category. The program also produces strategy charts from the plan developed. Any or all of these charts can be selected and included in the plan.

Being able to check key financial ratios against relevant industry norms is an excellent feature that small business owners would no doubt appreciate. Researching the availability of benchmarking data and including such data in the IPC Model is outside the scope of this thesis even though it is considered to be a worthwhile endeavour for perhaps a future research program.

## **2.6.2 Xero Online Accounting System**

This is a fully featured accounting program delivered online. It is an accounting and personal finance management service designed especially for small businesses and individuals. One needs to “sign up” without cost, before being able to evaluate the offering.

Software on the Internet is an interesting delivery method. It is also noted that many of the major banks in Australia support the download of their statements to this accounting package. It is understood that the developers/promoters of this software solution were the original owners of the highly successful MYOB™ accounting package. Whilst this is an interesting development using the latest in delivery methods, it is not an MCS because it only deals with accounting and lacks the elements of an MCS such as forecasting and performance measurement. (Xero, 2011)

This tool is designed for and is appropriate for small business. It would be necessary for the IPC Model to be able to interface with this type of software in order to bring in the Trial Balance data each month.

The transfer of this information is usually not a problem to achieve as part of the software design. However, within the scope of the IPC Model prototype development, interface with the desk top versions of MYOB™ and QuickBooks® only were included.

## **2.6.3 Pronto Software**

This product is an enterprise management system marketed under the name Pronto-XI that is integrated with Cognos 10 (Cognos Inc., 2011). The software has been developed by an Australian company and is sold in over 27 countries. It targets many industry groups with customers ranging from the small to larger organisations with complex operational needs. The product uses a modular approach to recording operational transactions with each module being linked to the general ledger. Apparently there is a budgeting module but it is not emphasised in the web site information. All modules are customizable. It does not appear to be suited to the small business sector for the reasons discussed earlier, that large ERP systems are not designed to meet the characteristics of the small business where the organisational structure revolves around a few individuals and the need for sophisticated integration of separate planning functions is not required. (Pronto Software, 2011)

### 2.6.4 Alight Planning

Alight Planning is a software product found at the general software web site called 'Capterra' (Capterra, 2011).

Under budgeting software on the website, the most highly recommended software was Alight LLC, 2010, *Continuous Planning and Scenario Analysis* (Alight, 2011).

Whilst the Alight system is comprehensive and allows input of past data via spreadsheet and other means, it is designed around larger organisations that have departments with different needs, even though it describes its clients as being small to mid sized businesses. This software is certainly not targeted at the less than 20 employee small business. The software is designed to have a flexible interface to meet the needs of the various department managers. This is a complexity that is not needed in the small business.

It is interesting that this firm distinguishes between budgeting software and forecasting software. Alight describe their budgeting software using jargon (shown in italics) that would not mean anything to the average small business OM:

- “Being about version control (*lock down*);
- Focus on dollar amounts, not *drivers*;
- *Canned* ‘out of the box’ solutions; and
- Cannot do sophisticated *driver-based planning*.”

It is not clear to the author what the jargon means. It is not important to this discussion, but rather is reproduced to demonstrate how difficult it must be for an OM of a small business to comprehend the software being promoted.

On the other hand, their forecasting module aims to view planning as a continuous process using the “rolling forecast” approach. It is both a budgeting and a forecasting module that takes account of business drivers and focuses on the user wanting to do multiple scenarios that can be updated with a single “click”. This means that if a parameter is changed or a budget amount is changed, that change is made in all scenarios.

It is not clear that such a feature is wise. Normally “parameters” such as interest rate or growth rate are set and then the result is calculated using the user supplied base data.

Different scenarios may need to be set up with different parameters. It seems odd that changing a parameter should change the results in all scenarios. For example, a sales forecast in the first scenario may use a 20% annual growth rate whereas in another scenario the sales forecast may use a high or lower annual growth rate. The purpose of the different scenarios is to show the effect of setting different parameters.

Another feature of the forecasting module in Aight is the use of linking to the “names of things” rather than by GL Account Number. The technique is known as object based linkage. It is a technique used by QuickBooks®. Aight allows the user to add months one at a time and because of the linkage method, the new month’s forecast follows the same forecast method into the new months. This is an excellent feature in one sense in that it makes extending the forecast an easy task but it does not force the user to think whether whilst moving into the future the same assumptions apply.

The IPC Model was not designed in this way as will be shown in Section 4.2. The approach taken was to link the latest actual data point to the next month’s forecast. Thus a revised forecast will take into account the latest known data and can have the same or different assumptions to derive the forecast. The reason for the different approach in the IPC Model is the principle that the most recent data known plus the past trends should influence the forward projections.

From the information available on the web site, the Aight system did not really emphasise the importance of actual data and future data. Although there would be provision to import past data, the focus seemed to be on the forecasting rather than the benefits that such software should achieve in effecting control of the business..

### **2.6.5 Budget Maestro**

Another package by a software developer called Centage is “Budget Maestro” designed for small to mid-sized businesses (Centage Corporation, 2011).

“Most large companies have already liberated their budgeting process – at least on the official level – from spreadsheets. Small and medium-sized businesses (SMBs), a term that refers to companies with 25 to 2,500 employees, in many cases still manage the difficult and error-prone process of budgeting on these same challenging spreadsheets.” (Centage Corporation, 2011)As in Aight above the definition of “small” is not as small as less than 20 employees. The software is designed for different “departments” to enter



their forecasts. Small businesses rarely have departments nor do they have personnel that specialise in budgeting.

This package allows the user to import their General Ledger and it allows for grouping of accounts and for additional accounts. The General Ledger is specific to a particular company and not generic.

This is an example where the IPC Model, designed for small businesses is attempting to simplify the general ledger. Grouping of accounts is allowed as in this software to help the OM focus on the important areas of the business needed for control. As is explained in Chapter 4 that follows, the IPC Model is designed to use a Generic Chart of Accounts rather than one specific to each company.

The user interface appears to be old fashioned and does not give the user an overall one page view of what is happening. There is a lot of drilling down to the detail. The budget items are entered at an extremely detailed level. In fact, this was touted as a feature of the program. There are no pop-up graphs to assist with setting the forecast.

Budget Maestro's propensity to laud (in their promotional material) the great detail in their budgeting and forecasting function is probably a suitable principle when there are multiple persons contributing data for the budget. Each division of the organisation is familiar with their particular detailed situation. Such a policy is contrary to the needs of a small business where the aim must surely be to simplify as much as possible in order to be able to "see" the big picture.

Budget Maestro has an interesting method of forecasting the Balance Sheet items and therefore the cash outcome. It takes the General Ledger Line Items (GL Line Items) in the profit and loss account and models the payment schedules according to 30/60/90 days for the accounts receivable and accounts payable accounts in the balance sheet. It does the same type of calculation for asset purchases and sales. That is, it does the individual debit and credit entries for each GL Line Item to derive the cash. Whilst this method of calculation simulates the double entry accounting system, one would expect that it would be prone to error. Whilst the method is 'grammatically' correct, the algorithm to achieve this in a time series (for example, each month over a twelve month period) would be quite tricky. Note that the method used in Budget Maestro is exactly the method that would be adopted if a person trained only in accounting designed the program.

There are limited “methods” available to forecast but sales forecasting and personnel planning are quite detailed. Whether the latter facilities are needed in the small business context is debatable. The level of complexity is discussed in Section 4.1 where the design principles for the IPC Model are set out.

Budget Maestro does not use a standard reporting system. It allows the user to generate the reports that they want from a large list of possibilities. Again, this is a feature that does not suit a small business where the accounting knowledge base is often limited. Budget Maestro addresses the financially aware specialist with professional standard accounting knowledge.

### **2.6.6 Cognos and Quantrix**

These are two of the well-known, large ERP (Enterprise Resource Planning) systems that are entirely inappropriate in the small business context.

Cognos (Cognos Inc., 2011) is probably the most comprehensive ERP system on the market. It is designed for many branches and departments where, within those branches, many users contribute to the planning and control process. Thus budget contribution management is important, as is communication up and down the organisational hierarchy. The software allows users to drill downs to detail – e.g. personnel budgets. Screen layouts are very number oriented and a bit confusing. They lack a time related graphical representation that normally helps with understanding of time related concepts. Visualisation techniques help the user to have a forward-looking perspective.

The IPC Model is designed to include graphical representation of all General Ledger Line Items (GL Line Items).

The Cognos like packages tend to mix up monthly and quarterly figures in the same spreadsheet like presentation, which can be confusing to inexperienced users. Cognos allows for excellent overview of results with commentaries on consolidated or drill down data able to be viewed at any time.

In these large ERP programs, the Chief Financial Officer (CFO) controls the process, which is most appropriate for the larger organisations. A small business does not usually have a CFO but rather a bookkeeper or office manager who also does ‘the books’ as an additional job. It is an entirely different context that requires a different IS solution.

The ERP system is designed to be extremely flexible and special reports can be requested at any time. This infers that the CFO has an in-depth knowledge of the program functionality and the reporting requirements of different stakeholders in the organisation. The CFO would need to be well versed in accounting principles and the planning and control functions relating to a large organisation.

In the web-based demonstration, the critical effect of Balance Sheet variations was not highlighted. The software appears to mainly concentrate on the Profit and Loss aspects. There was no particular emphasis on time flows, trend analysis or moving averages.

Targets and latest forecasts were differentiated from the budget figures, which is a design principle common amongst these types of software packages.

Although Cognos advertise a small business version of their software, it will simply be a cut down version of the full package. Although the accounting principles and the ideas behind a MCS apply to all types of organisation, is not valid to assume that one software package can accommodate the needs of all types of organisation.

Quantrix, (Quantrix, 2011) describe themselves as:

*“Where Business Intelligence meets Business Modelling ....*

*enabling organizations to replace spreadsheets for improved business performance and timely insights. Professionals in 50 countries use Quantrix software for:*

- *Budgeting and Planning;*
- *Financial Forecasting;*
- *Interactive Dashboards;*
- *"What if" Scenarios;*
- *Ad hoc Modelling and Analytics; and*
- *Risk Modelling”*. (online, Quantrix, 2011)

This software is incredibly comprehensive and includes many clever dashboards and graphical representations of all aspects of organisational planning and performance measurement. It is interesting to note that their customer base is limited to 900 in 50 countries. This compares with the small business accounting package (MYOB™) where the customer base is reported to be more than 700,000 SMEs (SmartCompany, 2011).

Quantrix's small customer base reflects the highly sophisticated nature of their product, which is not suited to the small business.

The conclusion from the analysis is that this tool is not appropriate for small business.

### **2.6.7 Prophix Software**

This package, (Prophix Software Inc., 2011) is advertised as providing "budgeting, planning and forecasting", "reporting and analysis" and "financial consolidation". It is promoted as a complete Corporate Performance Management (CPM) solution. It is possible to customize the software to match a company's unique needs but it is also possible to buy pre-packaged software for rapid implementation. The program was developed in Toronto, Canada and is distributed worldwide. It is designed for companies with revenues from \$US10m to \$US1 billion.

Prophix interfaces with any ERP system. It uses a mapping scheme to tie in with the internal chart of accounts. (Note that the IPC Model uses a mapping scheme.) Accounts can be expressed in an hierarchical fashion. After viewing the promotional video, it seems that the program is quite similar to Cognos. Discussion with one of their sales representatives reveals that it is not Cognos but is conceptually similar in its database structure described as "Cube" based the same structure used by Cognos. It is certainly extremely functional and flexible in its operation. Like Cognos, it deals with the communication required between different departments in a large organisation.

During the forecasting process, it allows the user to use different methods to spread the annual amount. This is a feature used by the IPC Model. The methods adopted in this research are not based on those of the Cognos product. They are based on the domain knowledge of the author. However it is surmised that there would be similarities between the two.

Overall the program is immensely complex and although the literature says that it "meets the many requirements that small to mid-sized companies are seeking" a discussion with the sales representative for Australia revealed that they have only had one customer that could be considered to be a small business.

Prophix includes a personnel planning module, a set of five standard financial reports (12 month, total year, current month, YTD, Variance and Variance %), the ability to create an unlimited number of other reports, data entry templates, scorecards and

dashboards, pre-defined account rollups (which is interpreted as being an hierarchical pre-set chart of accounts). Note the similarity here where the IPC Model uses a generic chart of accounts.

The program largely services the mid sized company range where there are 5-20 users. Even with the simplest installation, by the time that the users are trained and the program installed, the cost is around \$A10,000 – \$A15,000. This would usually be beyond the expenditure that a small company would be prepared to commit, especially when the cost of their accounting software is of the order of \$A600 with about \$A660 annual upgrade charge.

### **2.6.8 Whitebirch**

This system (Whitebirch Software, Inc., 2011) provides Enterprise Planning (for multi-user, multi-entity cases) and single user budgets, forecasts and plans, business plans, strategic plans and cash flow forecasting.

*“Whitebirch Enterprise Planning offers a compelling alternative to overgrown spreadsheets and static/inflexible special purpose applications.*

- *Object based. Objects replace cells, reducing formulas. Stability is rock-solid, and maintenance is a breeze.*
- *Database foundation. Provides scale, real-time collaboration, faster save and calculation times.*
- *Completely transparent. Drill down to any level. Click on any number for a full explanation. Instant error notification.*
- *Multi-dimensional analysis. Create unlimited multi-factor sets of cases and then mix and match those in any combination, instantly.*
- *The Office of Finance is in control. No IT support required to add new dimensions, drivers, line items, or reports.*
- *Fully integrated financials. Always balances. No additional logic needed.”(online, Whitebirch Software Inc., 2011)*

The single-user version can be used for budgets, forecasts, business plans, strategic plans and cash flow forecasting.

*“Whitebirch offers a best-in-class planning solution that delivers robust, fully integrated financial models. The dynamic, driver-based system improves the accuracy of strategic plans and enables rapid response to changing market conditions. Models are highly transparent and easy to follow, making for the clear, unambiguous presentation of the financial case.*

*Whitebirch Planning is powerful and easy to use, and can be deployed rapidly and cost-efficiently either on-demand or on premises. Begin the transition to dynamic planning and enhance the predictability of future results.”(online, Whitebirch Software Inc., 2011)*

This software is impressive. The philosophy behind the software is well developed and flexible. It appears to be too complicated for the small business sector, however. It has a Windows operating system look and feel but it is a definite improvement on the look and feel of the Cognos software and its imitators.

Projections use various methods described as cyclical patterns, step function, exponential, linear, free hand, growth over prior year. In the software explanation section of the web site, the emphasis seems to be on annual variations rather than monthly. This contrasts with the IPC Model where the emphasis is on a monthly cycle of performance evaluation. The forecasting methods described Whitebirch are similar to those designed for the IPC Model.

The reporting and analysis section is extremely flexible. The great flexibility in the reporting structure is excellent for CFOs and top managers in medium to large organisations but not suited to the small business context where some OMs have difficulty looking at the basic financial reports from their accounting system each month. Both standard and customised reports automatically refresh when the underlying data is changed.

The reporting in the IPC Model is deliberately simplified for the small business. There is a time dependent set of financial reports that show the actual results in one colour and the forecast results in another. There is a product margin report to support the financial reports. However, in contrast to the Whitebirch software, the emphasis in the IPC Model is on the results section where a comparison is made between just twelve actual and planned performance measures.

Whitebirch's ability to have a consolidated overview of the accounts and then to be able to drill down to more detail as required is an excellent feature. This program also makes extensive use of data visualization techniques.

Whilst these features are attractive in concept, the drilling down to more detailed data is not possible in the small business case where the accounting system and the planning and control systems are not integrated. Drilling down is possible if the OM enquires within the accounting system itself. The use of data visualization is important in the small business case and is a feature included in the IPC Model.

## **2.7 IS/IT Adoption in Small Businesses**

Even when every effort is made to design a software tool that meets the needs of the small business there is no certainty that the software will be widely adopted. This section explores the experience with IS adoption in small businesses generally. The purpose is to understand the context with regard to ISs and their use.

In the late 80s and early 90s with decreasing cost and the availability of standard software packages, microcomputers became accessible to the small business. Computers were mainly used for accounting applications in small firms. Motivating forces were the desire for better information. Growth in adoption of applications tended to take place where the OM was enthusiastic towards the technology (Cragg and King, 1993; Lee, 2004). Interest arose in developing theories to explain the factors that impinge on the acceptance of IT/IS technologies. Davis (1989) sought to find valid measurement scales for predicting users acceptance of computer applications. The study of 152 users and 4 different computer applications looked at the concepts of perceived usefulness and perceived ease of use and how they impacted on the adoption and continued use of the software. The result was that "users are driven to adopt an application primarily because of the functions it performs for them, and secondarily for how easy or hard it is to get the system to perform those functions." (P. 333). Davis (1989) concluded that no amount of ease of use could compensate for a system that did not perform a useful function.

OMs may need to be aware of the relationship between a formal planning and control function in their business and improved performance outcomes to realise the value ('usefulness') of the software tool. Ease of use is an expected feature in current day software. There are ample formats for presentation of data that have proved to be successful

and these formats can simply be copied. Back in 1989 when Davis was conducting his research, there was much experimentation to find the best methods to achieve successful computer-user interface modes. Without ease of use, software certainly would not be adopted, especially in the small business context.

Studies by De Lone (1981), Raymond (1985), Thong (1999), Lee et al. (2009) suggest that small businesses lag behind and differ from large businesses due to their lack of experience with information systems, dependence on external resources for technical support and relatively less investment in information systems.

With regard to adoption of innovations, Rogers (2003) defines five key considerations for the individual, which he terms the “perceived attributes of innovations” (p.15). (Italics are an explanation of the particular key consideration with respect to the IPC Model as the relevant software tool.) These are:

- a) Relative advantage; (*Does this software-based MCS (the IPC Model) allow me to run my business more effectively?*);
- b) Compatibility; (*Adoption would be more likely if the OM is pre-disposed to the benefits of careful planning and control as an accepted management practice. Without valuing this activity, adoption of a software tool for the purpose is unlikely.*);
- c) Complexity; (*If the software tool is perceived as being difficult to understand and use, it is not likely to be adopted. The perception of difficulty may not relate entirely to software usability but be dependent on the OM’s knowledge of accounting and management terminology and practices.*);
- d) Trialability; (*People generally do not like change. The OM needs to be able to trial the software in a step-by-step process and to build up confidence with its effectiveness over time. In this research the case study participants are assisted with the initial use of the software through interaction with the researcher.*); and
- e) Observability. (*This is the degree to which the innovation is visible to others. In this research the OM is able to deliver reports and performance graphs to external parties such as board members, stakeholders, banks, accountants and the like. The reports provide evidence of a well-managed business.*).



Rogers (2003) suggested that adoption of an innovation involves the decision to commit resources to the innovation. It can be defined as a decision to make full use of the innovation as the best course of action available. Resources in this instance include commitment of the OM's own valuable time to the planning and control function.

Following on from the 'perceived attributes of the innovation' Rogers (2003) is the concept of "Adopter Categories" (p.22). Translating Rogers' principles to this research, the 'social system' being considered is the population of small businesses. The principles relate to all small businesses, not specifically those in Australia. "Adopter Categories" are the classifications of the members of a social system on the basis of *innovativeness*, the degree to which an individual (the OM) or other unit of adoption (the management team) is relatively earlier in adopting new ideas than other members of a system." (p.297 – author's parenthesis). Rogers partitions the continuum of innovation into five adopter categories which are:

- Innovators;
- Early Adopters;
- Early Majority;
- Later Majority; and
- Laggards.

Rogers goes on to describe the characteristics of the individuals in each category. Of note is the empirical observation that innovators and early adopters tend to have the resources to adopt the innovation (IPC Model software package) whereas the Laggards are resource poor.

Another point that is relevant to this research is the observation that in an organisation (the small business) it is not necessarily the top official that is responsible for the organisation's innovativeness that leads to adoption. In the small business case, the impetus for implementation of an improved planning and control system may come internally from the accountant or bookkeeper or a non-executive interested shareholder or externally from a business coach, consultant or mentor.

The inference to be drawn from Rogers' (2003) work is that the software innovation (should it be commercialised) is likely to experience the 'S' shaped curve of adoption (p. 273) where the first businesses to use the software are most likely to have innovator characteristics such as being venturesome, having sufficient financial and time resources to try out the software and to have the necessary accounting and management knowledge to make use of the software's features. Thong and Yap (1995) examined the effect of three OM characteristics and three organisational characteristics from a sample of 166 small businesses in the manufacturing, commerce and service sectors. Interestingly at this time, the software applications being used were mainly for operational purposes (accounting, sales, inventory control, personnel and payroll and manufacturing software). Adopters tended to have OMs that were innovators, were positively disposed towards adoption of IT and to a lesser extent had IT knowledge. OM characteristics were a significant determinant but business size was the most significant determinant between adopters and non-adopters. Small businesses were identified as suffering from 'resource poverty'. Businesses that were larger were more likely to adopt IT. Cragg (2008) identifies resources within organisations as key to IT adoption.

Following this work a government programme was instigated in Singapore to overcome some of these adoption barriers. The programme met with considerable success (Yap and Thong, 1997). Thong (1999) further finds in a study of IS adoption in Singapore that the **extent** of IS adoption is dependent on organisational characteristics. Apart from business size, found in earlier research, the next most significant characteristic was employees' IS knowledge. When small businesses accumulate more IS knowledge through learning by using, knowledge barriers are lowered and the business becomes more confident to extend usage of ISs. The third characteristic was information intensity. IS adoption is more prevalent when there is a need to process large amounts of information.

Personal computing acceptance factors were studied in 358 small New Zealand firms (Igbaria et al., 1997). Perceived ease of use was found to be a dominant factor. The level of management and external support influenced the perceived ease of use and perceived usefulness. Lee and Runge (2001) found from a study of 71 small businesses (83% with less than 20 employees) that the firm's innovativeness was the strongest determinant for adopting traditional ISs. The businesses were selected from the appliance, furniture, electronic and hobby industries. Most had revenues less than \$5m pa. In a second analysis

with regard to adoption of Internet technologies (Lee, 2004) small businesses evaluated technologies on a case-by-case basis depending on their perceived characteristics.

Another study (Dembla et al., 2007) investigated the effect that IS maturity, organizational factors, and environmental uncertainty have on perceived usefulness and adoption of web-enabled transaction processing systems in small businesses. The sample respondents were randomly selected from an Internet-based database of more than 195,000 small, disadvantaged, and women-owned businesses. 215 responses were received and analysed. The results revealed that adoption of web-enabled transaction processing in small businesses was positively influenced by perceived usefulness, IS maturity and the sufficiency of the IS budget.

Lee et al., (2009) report that small firms generally lag behind their large counterparts in computerization and digitization. In their opinion, the digital divide is getting even wider between small and large firms. This was mainly attributable to the inability or unwillingness of small firms in making the necessary IT investment. Their Korean study is based on a sample of 698 small firms defined as those with less than 50 employees.

The results showed that: (1) individual IT knowledge and both traditional and electronic communication methods significantly contribute to the internal process performance of small firms; (2) internal process performance, organizational IT knowledge, and electronic communication methods affect customer performance; and (3) financial performance is affected by process and customer performance. Customer performance included such measures as swift response to complaints, customer volume increase and loyalty, Customer Relationship Management (CRM), able to differentiate services from customer response analysis. The findings imply that it is imperative for small firms to adopt computerisation to achieve improvements in business performance.

In a study that is similar to this research, Qureshil et al., (2009) used an action research intervention in seven micro-enterprises with the aim of introducing IT to assist them improve their competitiveness. The firm's progress was assessed using the Focus Dominance Model of Levy et al., (2011). The focus of the IS was to help reduce costs and to achieve simple administrative efficiencies. In every case, as a result of the intervention, the firm moved from the efficiency quadrant to the innovation quadrant. This was interpreted in the paper as the OMs wanting to integrate their ISs with their business

strategies by improving their operational efficiencies as well as their relationships with suppliers and customers.

Smith and Simon (2009) found that data integration systems in a sample of 97 small accounting firms increased information availability, which in turn improved the effectiveness of their strategic decision-making. The software tool being developed in this research can be classified as an IS that integrates many data sets as shown in Figure 11 (Section 4.1) where integration with the accounting system and other data sources is explained.

Armstrong et al., (2011) conducted a survey of 171 small businesses in northern New South Wales encompassing 64 wholesalers, 97 manufacturers and 10 businesses with both activities. Of interest to this study is that 62.6% of these businesses had less than 5 employees and that the average age of the businesses was 16 years, which means that they were not sampling start-ups. The survey results revealed that business owners attached more importance to accounting than any other business functions. They invested in computer-based IS (CBIS) more for operational than strategic reasons. They tended to be satisfied with their investment in CBIS but very little advice was taken from others, such as employees, consultants or family members. None of the applications related to planning and control functions. The authors confirmed that their study was consistent with other studies that show small businesses have a lack of emphasis on management software and that they have a concern for operational as opposed to strategic issues. Moreover they reported that their findings were consistent with ABS statistics that Australian small businesses are typically non-innovative and have low planning and development priorities.

## **2.8 Literature Review Summary**

The review of literatures contained here show that as time has progressed, decreasing costs of computers and better software packages have allowed the benefits of IS to become accessible to even the smallest business. The premise behind this research is that the software packages currently available for the planning and control function being largely cut-down versions of software designed for larger businesses, are not meeting the needs of small businesses. This research aims to show that purpose designed software can have a positive effect to encourage small business to use a computer based management control system.

In this thesis, however, the issue should not be the adoption of the software tool per se. It is the **adoption of an improved process for Management Planning and Control** that is being encouraged. The software is viewed simply as a tool – an enabler.

To this end, a conceptual model has been developed to explain the factors that contribute to the success of a small business. It is argued (with support in the literature) that there are two aspects shown in the model that are not well addressed by the small businesses in general. These are:

- First, the thinking that is required to clearly articulate exactly what business model is being used that explains how the business is strategically placed for success; and
- Second, the detailed attention to the planning and performance measurement of the economic aspects of the business.

It is these two areas that are the subject of this research and the subsequent design of the IPC Model as the tool to facilitate the planning and control activity.

The argument is that if the tool in fact facilitates the planning and control activity and the OM sees value in the activity, then it is likely that the software tool will be adopted.

Intrinsically it is the MCS that is embedded in the tool that needs to influence improvement in business performance and outcomes for the OM. This is the impetus for the design of the IPC Model.

In the next chapter the merits of various methodologies that could be adopted to achieve the research aims are discussed. A choice is made, and the methods that are chosen for the research programme are explained.

## **Chapter 3 Methodology**

### **3.1 Choice of Research Approach**

This research is situated in the IS discipline. Baskerville and Myers (2004) commented that there have been frequent calls for IS researchers to make their research more relevant to practice and “yet it seems IS researchers continue to struggle to make excellent research practically relevant” (p.329). This research is certainly aiming to be academically excellent but also eminently practical.

The scope of this research is informed by the need to answer the primary research question, which addresses a recognised deficiency in the management control systems being applied in small businesses. In order to solve the problem, it is postulated that a specially designed IS artefact (the IPC Model) may have two effects. First, it may fill a gap in the availability of planning and control software tools designed for the small business. Second, when the software tool is introduced to the small business, it may be shown to act as a catalyst enabling the business to adopt an improved MCS, which in turn is expected to have the practical result of improving business outcomes.

From these considerations, the research method needs to include the design and construction of the software tool from scratch (a practical, action taking activity) and then the resulting product needs to be introduced to and implemented in actual small businesses where a methodical approach is needed to be able to assess whether the software in fact achieves its designed aims. The nature of the investigation lends itself to a qualitative approach when assessing the impact of the software on a case study business.

The data collected in this research is of two types. The first is the accounting and the business performance measurement data that is of a quantitative nature and is processes within the IPC Model. The second is the observed actions and the interactive dialogues between the OMs who use the software and the researcher who explains the operation of the software. Both sets of data types are needed to assess any the change in the performance of the businesses and any change or observation that impacts on the attitudes of the OM’s towards the planning and control process. The research needs to be aware and observant of any barriers that arise to the desired (designed) use of the software.

Whilst the above description of the research may be interpreted as as a linear progression from development of the artefact to its implementation in case study businesses, in real life it does not happen in this way. The research program involves an iterative process to achieve the aims stated.

The details and implementation of software design and build require constant testing of concepts with desk testing data and then from the results of such early testing, extension of the design and further development.

The research design (to answer the research questions) deliberately allowed testing in case studies quite early in the software development process. In fact before all components of the software had been written. This approach was in fact, the best method as the feedback from users provided information and learning that could take the work to the next stage in the iterative process.

Another factor in the selection of research method is that the researcher has extensive domain knowledge in the area and is unavoidably embedded in the process especially in the software design phase. The introduction of the software prototype in the case study sites is an intervention and the role of the researcher must be both that of the observer and that of the teacher as the software operation is introduced. This was the role taken and extensive data was collected over many sessions and many contact hours as described later in Chapter 6.

In this section, the research approaches that fit with the practical realities of the research effort are discussed. Four specific research approaches are chosen and formulated into a combined method that is explained in Section 3.2, Figure 10 below.

This research is not testing established theories. It is rather exploratory in nature and hence this influences the choice of research method.

The choice of method emerged after examination of texts explaining business research approaches in general and research in the IS area in particular (Zikmund, 2003; Myers, 2010). From these considerations and analysis three recognised IS research approaches and a philosophical perspective were selected as being appropriate. This section therefore discusses the merits of each in the light of the research goals and then the rationale for choice of approach is explained. The three approaches and the philosophical perspective are:

- Action Research (AR) or Canonical Action Research (CAR);
- Design Science (DS) or Design Science Research (DSR) or Design Research (DR);
- Qualitative Research related to Case Studies (QR); and
- Interpretive Philosophical Perspective.

### 3.1.1 Action Research (AR)

This approach aims to solve organisational problems through intervention while at the same time contributing to knowledge (Davison et al., 2004; Myers, 2009; Baskerville and Myers, 2004; Coghlan, 2004; Dick, 2003; Iversen et al., 2004).

There are two parts to the research as described by Myers, (2009, p64):

**The first part:** Action research studies must demonstrate a contribution or potential contribution to practice (the ‘action’); and

**The second part:** Action research studies must demonstrate a clear contribution to research (the ‘theory’).

*“The distinctive feature of action research is that the researcher deliberately intervenes while at the same time studies the effect of that intervention” (Myers, 2009, p.57).*

*“It is strongly oriented towards collaboration and change involving both researchers and subjects.” (Baskerville and Myers, 2004, p.330).*

There is much discussion in the literature about AR. A special issue of MIS Quarterly was devoted totally to the topic with a selection of exemplar articles to demonstrate applications of the approach.

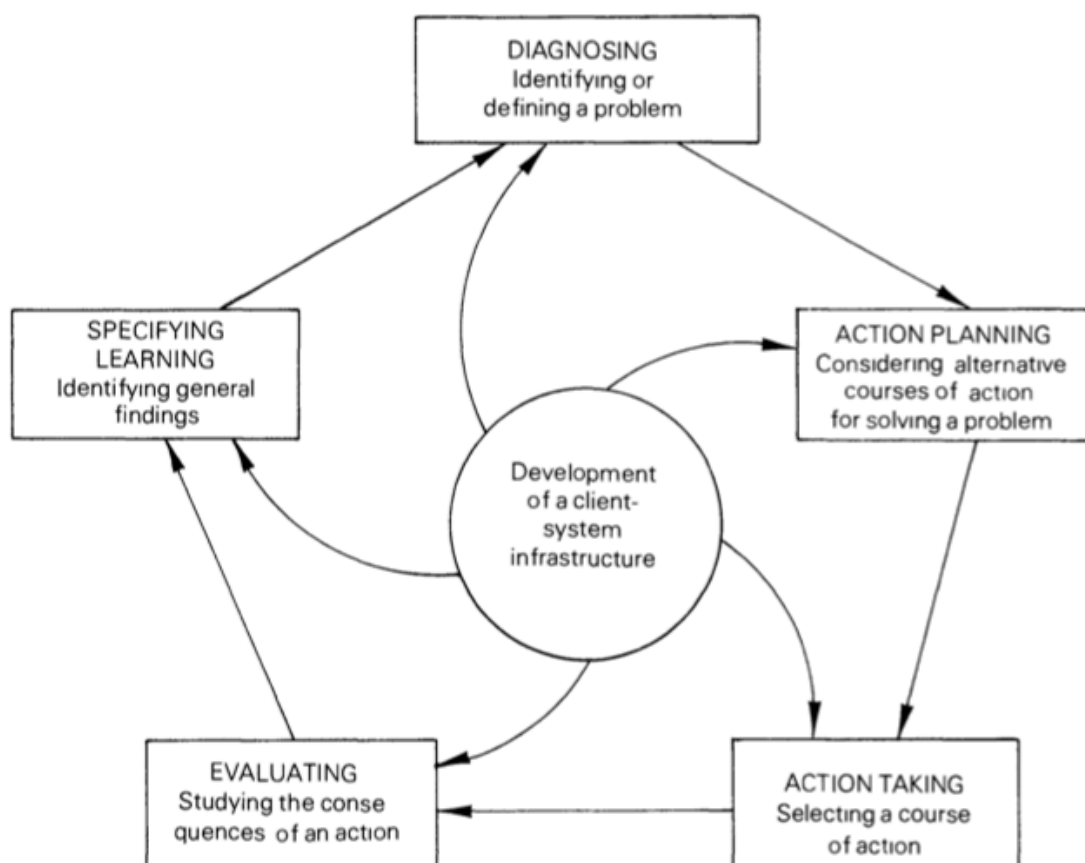
Of particular interest to this research is the paper by Street and Meister (2004) relating to small business growth and internal transparency. What is interesting about this study is that the reason for the research was initiated from the organisation. The clients were seeking assistance in evaluating and specifying a new IS that would accommodate a growth “punctuation” event.

This contrasts with my research in that the initiation comes from the research end. The need is presumed from prior practical experience and confirmed in the literature. The researcher says “but I have a solution to this problem” and then approaches organisations to introduce “the solution” which in this case is in the form of an artefact (the IPC Model).



Action research originated after World War II in the social sciences – specifically social psychology – when the idea of social action arose. The method developed around interaction with patients seeking therapy for social illnesses (Lewin, 1947). His original model of action research included iteration of six phased stages: 1) analysis, 2) fact finding, 3) conceptualisation, 4) planning, 5) implementation of action and 6) evaluation. (Baskerville and Myers, 2004).

There has been much adaption of the method in later years as it is applied to many different fields of research including the IS field. Susman and Evered (1978) differentiated action research from positivist science saying that the latter was not an appropriate method for “generating knowledge for use in solving problems that members of organisations face.” They suggested the “cyclical process of action research” that is presented in Figure 9 below.



**Figure 9 - The Cyclical Process of Action Research (Susman and Evered, 1978, p588)**

The application of AR approaches to IS research has attracted criticisms but these are “more likely to be general difficulties with research in social science rather than problems peculiar to AR”. Some of the criticisms are: (1) the lack of impartiality of the researcher; (2) lack of rigor; (3) AR being branded as ‘consulting masquerading as research’; and (4) AR is context-bound and not context-free (Baskerville and Wood-Harper, 1996). In addition, there is criticism in cases where the distinction between the learning or research elements of the study and the action taken are not clear. Being aware of these negatives and the arguments that contradict the perceptions is part of research method selection and implementation.

The paper by Davison et al. (2004) provides clear guidelines in the form of five basic principles that should be followed to ensure rigor in a research method that takes place in a highly applied field. Such guidelines, if followed, allay criticisms of the research effort. In Davison’s paper action research is referred to as “canonical action research (CAR)”. “The term ‘canonical’ is used to formalize the association with the iterative, rigorous and collaborative process-oriented model developed by Susman and Evered (1978) that has been widely adopted in the social science and has gained ‘canonical’ status.”

The five principles are shown in Table 3 with comments on their applicability to this research programme.

Canonical AR Criteria		
Criterion	Description	Comment on applicability
<b>Principle 1: Researcher-Client Agreement (RCA)</b>	The RCA provides the basis for mutual commitment and role expectations.	Letter explaining the research program and roles of participant and researcher, transmitted and agreed with each case study firm.
<b>Principle 2: Cyclical Process Model (CPM)</b>	The CPM consists of the stages: diagnosing, action planning, action taking, evaluating and specifying learning.	Cycles took the form of “sessions” with case participants.
<b>Principle 3: Theory Development</b>	Theory must play a central role in AR.	Some theory at the beginning with ‘grounded’ theory emerging as a result of analysing all cases at the end.
<b>Principle 4: Change through Action</b>	Action and change are indivisible research elements related through intervention focused on producing change.	Change resulted from application of the artefact. (See Chapters 5 and 6)
<b>Principle 5: Learning through Reflection</b>	Considered reflection and learning allow a researcher to make both a practical and theoretical contribution.	Achieved. (See Chapters 6 and 7).

**Table 3 - Principles of Canonical Action Research**

(Adapted from Davidson et al., 2004 and Cole et al., 2005)

Baskerville and Wood-Harper (1996) give an excellent critical perspective on action research as a method for IS research. They address the philosophical aspects and the history of the method in some detail. They then go on to explain how action researchers can achieve scientific rigor through a number of characteristic strategies. From a philosophical perspective they define action research as “a method that could be described as a paragon of the post-positivist research methods. It is empirical, yet interpretive. It is experimental, yet multivariate. It is observational, yet interventionist, ,” p239.

Klein and Myers (1999) observe that the underlying epistemological assumptions for AR may be positivist, interpretivist or critical in nature.

The Baskerville and Wood-Harper (1996) strategies are clearly stated in the summary to their paper and are based around the AR Cycle of Susman and Evered (1978) in Figure 9 above. The strategies are reported here as they assist in discussing the method that most closely fits with this research programme.

*“First they must establish an ethical client-system infrastructure and research environment. They must plan their data collection carefully. They must observe iterative phases that formulate theory, plan action, take action and evaluate that action. Through this process they must promote collaboration by the subjects and support their subjects’ learning cycles. Despite the idiographic nature of the study, the researcher may imply certain generalizations based on the theory and learning. Reports of the research must disseminate the scientific knowledge achieved by the study to allow future work that can confirm or refute any causal suggestions or claims of generalized theory.” (p.244).*

Street and Meister (2004) in their paper clearly describe an action research driven case study in the small business context that effectively separates the action from the learning as well as enfolds the literature and develops theory. This is the type of approach that has been used in this research. Two points that are relevant here are that the researcher “takes the time to develop an effective working relationship (with the case)” and the importance of “solving genuine problems”. (p.497).

The nature of AR that is described in the literature above is that of the researcher coming to an organisation, working with the subjects in that organisation with an agreed joint goal of solving a particular problem, which originated from the organisation side. This scenario does not quite fit with the goals of this research where the problem is identified to exist in many small organisations and the researcher is taking the initiative by creating a solution in the form of a material artefact that may or may not “solve” the problem. The nature of the research is to examine whether the proposed artefact design is such that the problem has the potential of being “solved”. This approach is really a different perspective.

The views of Cronholm and Goldkuhl, (2003) are closer to the aims of this research. They describe action researchers as actors that intervene in a business change process. The business change process works mainly as a source for collecting data and the research part takes place when the researchers reflect on the business change process.

McKay and Marshall (2001) view AR as a dual cycle process separating out the research interest from the problem solving interest of the business. How the collaboration is achieved is not clear in this case.

However with the Cronholm and Goldkuhl (2003) approach there are three practices – the theoretical research practice, the business change/empirical research practice and the regular business practice. This concept fits nicely with the research programme designed for this thesis as the interaction with the case subjects involves a collaboration between the needs of the business and those of the researcher who is active in introducing change but is also an observer to understand how that change comes about.

Nevertheless many of the principles of AR are applicable, especially the iterative process, the need to reflect on the actions and results and the need to contribute to knowledge.

### **3.1.2 Design Research (DR)**

*“Two paradigms characterize much of the research in the IS discipline: behavioural science and design science. The behavioural science paradigm seeks to develop and verify theories that explain or predict human or organisational behaviour. The design science paradigm seeks to extend the boundaries of human and organisational capabilities by creating new and innovative artefacts.” (Hevner et al., 2004, p.75).*

In this research there is an artefact involved but there is also a behavioural aspect concerning the human propensity to want to avoid planning. Hevner et al.’s (2004) paper discusses the use of design-science research in IS via a conceptual framework and a set of seven research guidelines that are designed to assist with the execution and evaluation of the research. In this section the alignment of this research with the design research method will be discussed.

Hevner et al. (2004) refer to four exemplar DR papers that were used to demonstrate the application of the guidelines. Some of the key points raised in the paper are relevant. Against each principle, the applicability of this research is commented upon (in italics). The points raised are:

- Design-science is fundamentally a problem-solving paradigm. *(In this case the small business planning and control problem);*

- Artefact creation relies on existing kernel theories that are applied, tested, modified and extended through the experience, creativity, intuition and problem solving capabilities of the researcher (Markus et al., 2002). *(In this case – the database design embodied in the FileMaker® program and the theory of management accounting, the framework for developing the business model, and the framework created for factors affecting business success.);*
- The resultant IT artefact extends the boundaries of human problem solving and organisational capabilities by *providing intellectual as well as computational tools*. It is necessary to *differentiate routine design or system building* from DR. (Markus et al., (2002) in relating the history of IT development classify the various system types. Initially artefact development concentrated on transaction processing systems (TPS) until the late 1960s when it was increasingly applied to management reporting and decision making, where decision support systems (DSS) with an iterative approach to systems development followed by the emergence of executive information systems (EIS) that required a different development approach. *(The IPC Model is in a sense an EIS with a developmental approach based on the expert system (ES) concept. It also is an intellectual tool, as it requires the user to set goals and develop predictions of business outcomes.)*
- Given the organisational context DR affords the opportunity to apply empirical and qualitative methods. *(In this case, case studies evaluated using qualitative methods.)*
- The design process is a sequence of expert activities that produces an innovative product. There is a build-and-evaluate loop that is typically iterated a number of times before the final design artefact is generated (Markus et al., 2002). During this creative process, the design-science researcher must be cognisant of evolving both the design process and the design artefact as part of the research. *(The design process is described in Chapter 4. In this case, it was not expected that a new theory of the design process would emerge but rather a theory relating to the way in which the design was utilised and whether the design assisted in solving a human/organisational problem.)*

The next step is to assess whether this research program complies with the (Hevner et al., 2004) seven guidelines.

Design-Science Research Guidelines		
Guideline	Description	Comment on applicability
<b>Guideline 1: Design as an Artefact</b>	Must produce a viable artefact in the form of a construct, a model or an instantiation.	Software tool is an instantiation
<b>Guideline 2: Problem Relevance</b>	Need to develop technology-based solutions to important and relevant business problems.	Complies.
<b>Guideline 3: Design Evaluation</b>	The utility, quality and efficacy of a design artefact must be rigorously demonstrated via well-executed evaluation methods.	Case studies and qualitative method of evaluation.
<b>Guideline 4: Research Contributions</b>	Must provide clear and verifiable contributions in the areas of the design artefact, design foundations and/or design methodologies.	Contribution from the design and functionality of the artefact.
<b>Guideline 5: Research Rigor</b>	Relies on the application of rigorous methods in both the construction and evaluation of the design artefact.	Rigour is more prevalent in the evaluation phase.
<b>Guideline 6: Design as a Search Process</b>	The search for an effective artefact requires utilizing available means to reach desired ends while satisfying laws in the problem environment.	Use of FileMaker Pro Advanced® development package and test data during iterative development process.
<b>Guideline 7: Communication of Research</b>	Must be presented effectively both to technology-oriented and management-oriented audiences.	Plans for papers to be published, video demonstration of artefact.

**Table 4 - Design-Science Research Guidelines (adapted from Hevner et al., 2004)**

Design Science Research (DSR) (or alternatively Design Research (DR) and Design Science (DS)) is a relatively new entrant to the set of methodologies, paradigms and orientations that one can take in entering into IS research. However, the importance of the sciences of design was recognised by a seminal publication in 1996 aimed at the then (new) computing sciences, “The Sciences of the Artificial” that focuses on the design of artefacts and artificial systems. “Everyone designs who devises courses of action aimed at changing existing situations into preferred ones” (Simon, 1996, p231).

Although there is much current discussion about DR and what constitutes acceptable research methods (Baskerville et al., 2007; Puroo et al., 2008; Venable, 2010; Venable et

al., 2010; Nunamaker et al., 1991; Hevner, 2007) the need for IT artefacts is not in dispute and neither is the need for artefacts to be designed such that they are of practical use to people in organisations (Markus and Keil, 1994).

Venable (2010) examines the extant literature on DR and notes that whilst the Hevner (2004) guidelines are largely endorsed, he raises the question of whether they need to be applied in a strictly mechanistic way. His research revealed that ‘naturalistic evaluation rated higher than artificial evaluation’. ‘Reports of satisfaction from users of the instantiated artefact .... were persuasive to reviewers [for reporting in journals]’(p.118). In Venable’s (2010) survey some respondents commented that the development and use of ‘design principles’ were more relevant than ‘design theory’. These points have relevance to this research program as it involves case studies, design principles and both artificial (desk testing with live data) and naturalistic (cases) evaluation.

### **3.1.3 Qualitative Research (QR)**

There are many ways to classify and to characterize different types of research. One of the most common is the distinction between qualitative and quantitative research. Although quantitative research was originally developed to explain natural phenomenon in natural sciences, the method is now well accepted in the social sciences. Examples of quantitative methods include survey methods, laboratory experiments, econometrics and numerical methods such as mathematical modelling. Most quantitative researchers use statistical tools and packages to analyse their data (Myers, 2010).

Qualitative research methods were developed to enable researchers to study social and cultural phenomenon. Examples of qualitative methods are action research, case study research and grounded theory. Qualitative data sources include observation and participant observation, interviews and questionnaires, documents and text and the researcher’s own impressions and reactions (Myers, 2010).

By way of explanation, “the purpose of ‘grounded theory’ in business and management is to develop new concepts and theories of business-related phenomenon, where these concepts and theories are firmly grounded in qualitative data” (Myers, 2010, p107).

Chapter 6 in this thesis describes how the qualitative data collected in the case studies was analysed in terms of concepts and how these concepts developed from the data into a theory of adoption of the IPC Model. (Section 6.4.2, Figure 87.)



It is important to be clear about the type of data collected in this research. An observer would rightly note that the financial data collected from the case studies and their graphical representations are quantitative in nature. The participants and the researcher both make judgements and comments as to the meaning of these data in terms of business performance. Such comments and assessments of the data presented are in the context of assessing the effectiveness of the IPC Model and the impact it has on the MCS of the organisation. The reaction of the participant and their point of view is what is important and is what the research is about. This is why a qualitative approach was taken rather than a quantitative approach.

The next point is to explain why five case studies were chosen and not one as suggested by Myers, 2010. Of course one case study is a minimum and may provide a satisfactory basis for developing grounded theory. Such a study would need to be in-depth and would need to provide sufficient rich data from which to develop a theory of the business phenomenon.

In this research, the phenomenon of interest is the adoption of the IPC Model and its effectiveness in encouraging the improvement in management control in a small business. The context is important in this research but the researcher has no control over the situation after the case has commenced. It is not possible at the outset when enquiring with a business whether they want to be part of a study to know the detailed state of their management systems and in particular whether their accounting system is in a satisfactory state to provide usable data to the IPC Model each month. It is for these reasons of unavoidable uncertainty that it was decided to use five cases in the research. It was considered that more than five would not greatly add to the integrity or rigour of the research.

Eisenhardt (1989) describes the process of building theory from case study research ('grounded theory'). She comments that, "the process is highly iterative and tightly linked to data" (p.532). This is consistent with the AR and DR approaches described above. In this research there are repeated meetings with the case study participants that are called "sessions". These working sessions were not structured and did not take the form of an interview. They were rather a dialogue between the researcher and the participant(s) with a purpose in mind – that of introducing the IPC Model and then encouraging the participant to use the software and comment of their reaction and the effect it had on their understanding and the view that they had of their business's

performance. All of the working sessions were recorded, many were transcribed and the researcher took detailed notes during and after each session. Screen shots were taken of financial data during each phase of the implementation process. Free discussions were encouraged where appropriate to gather insight into the OM's strategic view of the business and future aspirations. The data were rich and varied taking the form of transcriptions from working sessions, financial data and forecasts relating to the company and field notes from the researcher. The analysis of these data is described in detail in Chapter 6.

Eisenhardt (1989) notes that some prior specification of constructs or framework for the research can shape the initial design of the theory-building process. Her emphasis is on letting the data tell the story. Analysing that data is the "heart of building theory from case studies" (p.539). In this research a framework (the Small Business Success Model – Section 2.1.4) has been developed that informs the software design.

When the software is tested in the case study environment, the opportunity exists for not only confirming the functionality of the artefact (the IPC Model) but to observe the response to the management control process embedded in the software. From those observations one can determine if a theory explaining usage and adoption emerges. The outcome was in fact that a theory emerged, and its development is described in detail in Chapter 6, Sections 6.4 and 6.5.

The art of coding data and analysing that data is informed by the work of Strauss and Corbin (1998) and that of Yin (2003) concerning procedures to follow in case study research. These works show that there are many different applications of qualitative methods but the principles for working with qualitative data are necessary to know for this research not only for analysis but to inform the way the results are presented and how inference is drawn from those results (Wolcott, 2001). Baskerville and Pries-Heje (1999) and Baskerville and Myers (2004) support the method of melding AR with grounded theory and the aim of making research relevant to practice, which is the aim of this research programme.

To some extent this research follows the multi-grounded theory approach of Cronholm (2003) where theory is both developed from the empirical data and melded with the theory developed from the literature – the Small Business Success Model (Chapter 2 – 2.1.4).

The analysis process adopted in this research involves collecting data in the form of transcriptions of working sessions, emails, financial data showing plans and performance recorded within the prototype software tool and the researcher's field notes and memos. These data are input to NVivo™ 8 (QSR International Pty Ltd 2007) that is used to facilitate the analysis. Details of the analysis are given in Chapter 6.

All of the research documents (the "sources") are then analysed using "free coding" to identify concepts that arise. Through an iterative process "axial coding" looks for relationships between concepts and whether groups of concepts form into themes. It is a process that allows the merging of related data into a form that leads to a theory. The theory should enhance understanding of the field experience and inform the answers to the research questions. A detailed description of the analysis process that eventuated is recorded in Chapter 6.

### **3.1.4 Philosophical Perspective**

The philosophical rationale of the field studies in this research is classified as interpretive. Klein and Myers (1999) set out a seven-point table that summarise the principles that should be followed when carrying out interpretive field research. They argue that, "while the conventions for evaluating IS case studies conducted according to the natural science model of social science are now widely accepted, this is not the case for interpretive field studies" (p.67). They point out that the word interpretive is not a synonym for qualitative. Qualitative research may or may not be interpretive. For example, case study research can be positivist (Yin, 1981, 2003) just as action research can be positivist, interpretive or critical.

"Positivist researchers generally assume that reality is objectively given and can be described by measurable properties, that are independent of the observer (researcher) and his or her instruments" (Myers, 2010, p.37). This approach is suited to situations where a researcher would like to test a theory postulated at the beginning of the study. The aim is to increase the predictive nature of the theory with the study results satisfactorily confirming the theory's validity.

Critical research is far less common in business and management disciplines (Myers, 2010). Critical researchers are concerned with the phenomenon being situated in social and economic circumstance over which the individual participants may have little

control. The research perspective is concerned with challenging social conditions, beliefs and values that impact on the business environment or the study phenomenon.

Interpretive research in business IS is “aimed at producing an understanding of the *context* of the IS and the *process* whereby the IS influences and is influenced by the context” (Walsham, 1993, p.286). This comment is completely in alignment with this study. The context is small business. The process devised is a MCS in order to facilitate the planning and control function. The IS is the software tool and its development is influenced by the characteristics that exist in the context.

Thus an examination of the seven principles (Klein and Myers, 1999) together with comments as to their applicability, should clarify the philosophical rationale chosen.

### Principles for Interpretive Field Research

#### 1. The Fundamental Principle of the Hermeneutic Circle

This principle suggests that all forms of human understanding are achieved by iterating between the independent meaning of parts and the whole that they form. This principle of human understanding is fundamental to all other principles.

*This principle is particularly important in this study when interpreting the transcriptions collected in case study sessions and the notes taken at the time by the researcher. For example, the “parts” may relate to specific GL Line Item predictions in a particular company but the meaning may be attributed to the user understanding of the software rather than an aspect of the firm’s strategy or the financial planning process. Overall company performance is dependent on all the “parts” of the business performing as per plan. If one part is out of alignment then the total will not reach the goals set.*

#### 2. The Principle of Contextualisation

Requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged.

*Context is paramount in this study. The premise is that small businesses are different and that the way to encourage better planning and control processes is to provide a suitable tool that breaks down some of the barriers preventing the formalisation of a suitable MCS.*

#### 3. The Principle of Interaction between the Researchers and the Subjects

Requires critical reflection on how the research materials (or “data”) were socially constructed through the interaction between the researchers and participants.

*All three methods discussed above do this! In this case the researcher plays the role of tutor when it comes to introducing the process inherent in the software and may intervene in assisting the user with the building of realistic predictions whilst at the same time must observe the user’s reaction to the software and to listen to comments that are being made. There is a delicate balance here between the intervention role and that of learning from the user reaction.*

Principles for Interpretive Field Research	
<b>4. The Principle of Abstraction and Generalisation</b>	<p>Requires relating the idiographic details revealed by the data interpretation through the application of principles one and two to theoretical, general concepts that describe the nature of human understanding and social action.</p> <p><i>Whilst this is a desirable attribute to achieve in the research, it is not possible to generalise from a case study sample of five. The data are interpreted and an emergent theory is sought. The framework developed and the software design principles represent the initial abstraction of a solution to the problem and the case studies give some confirmation or otherwise of the pre-conceptions.</i></p>
<b>5. The Principle of Dialogical Reasoning</b>	<p>Requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings (“the story which that data tell”) with subsequent cycles of revision.</p> <p><i>This principle is entirely applicable and fundamental to this research project. It is almost the “why” of the whole project.</i></p>
<b>6. The Principle of Multiple Interpretations</b>	<p>Requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives of the same sequence of events under study. Similar to multiple witness accounts even if all tell it as they saw it.</p> <p><i>Again this principle is fundamental to the project and is the reason why five cases were chosen and not a single case. Multiple interpretations in this case may not be expressed in words but in actions that the user takes in working with the software. In the extreme, some may embrace the concepts of the model but others may totally reject that concept from their own perspective that may or may not have anything to do with the functionality of the software. It is important to be able to separate out the case’s interpretation and its underlying reason.</i></p>
<b>7. The Principle of Suspicion</b>	<p>Requires sensitivity to possible “biases” and systematic “distortions” in the narratives collected from participants.</p> <p><i>In this project the data consist of user observations, transcribed discussions and company financial data collected over a long period of time. As the financial data from the company is operational there are unlikely to be distortions from this source. As all studies are longitudinal, any distortions in narratives would start to become apparent over time and would be revealed as inconsistencies in the company financial data. Care has been taken in the choice of cases to eliminate bias as described in 3.3 below. There is always the possibility of the case company responding because of the Hawthorne effect but such possibilities are again unlikely given the longitudinal nature of the studies.</i></p>

**Table 5 - Interpretive Field Research Principles (adapted Klein and Myers, 1999)**

(The **Hawthorne effect** is the alteration of behaviour by subjects of a study due to their awareness of being observed. (The New Oxford Dictionary of English, 1998, p.844).

The term was coined in 1950 by Henry A. Landsberger, (Landsberger, 1958), when analysing older experiments from 1924-1932 at the Hawthorne Works (a Western Electric factory outside Chicago). Hawthorne Works had commissioned a study to see if its workers would become more productive in higher or lower levels of light. The workers' productivity seemed to improve when changes were made and slumped when the study was concluded. It was suggested that the productivity gain occurred due to the impact of the motivational effect on the workers as a result of the interest being shown in them.)

Note that Klein and Myers warn that judgement and discretion need to be applied in deciding whether, how and which of the principles are appropriate for any given research project but at the same time, they argue that the principles are, to some extent, interdependent.

All four research approaches described above are applicable to this research. One should ask whether it is appropriate to choose just one of them? Or is it a choice between AR or DR? Cole et al., (2005) examine the similarities between the two methods that each seek to balance the interests of practitioners and researchers. They argue that the two methods “are closely related and can offer unique strengths to the IS research community” (p. 325). The methods are both “proactive in that they intervene rather than study a phenomenon after the fact” (p. 325).

Cole et al., (2005) define DR as “consists of activities concerned with the construction and evaluation of technology artefacts to meet organisational needs as well as the development of their associated theories” (p. 326). They point out that DR is rooted in pragmatism. Whereas AR is defined as “fundamentally a change-oriented approach in which the central assumption is that complex social processes can best be studied by introducing change to these processes and observing their effects” (Coles et al., 2005, p.327). Most research using this method implicitly follows an interpretive epistemology (Baskerville et al., 2004).

In order to examine the similarities between AR and DR, Cole et al. (2005) referred to two exemplar papers, one representing DR (Markus et al., 2002) and the other AR (Iverson et al., 2004). Both papers were cited as being high quality instances of their respective research approaches. Cole et al., then cross-applied the principles of AR (CAR Research Criteria) of Davison et al. (2004) (see above) to the DR example and then the principles of DR (Hevner et al., 2004) to the AR example. Their analysis revealed that the two research approaches

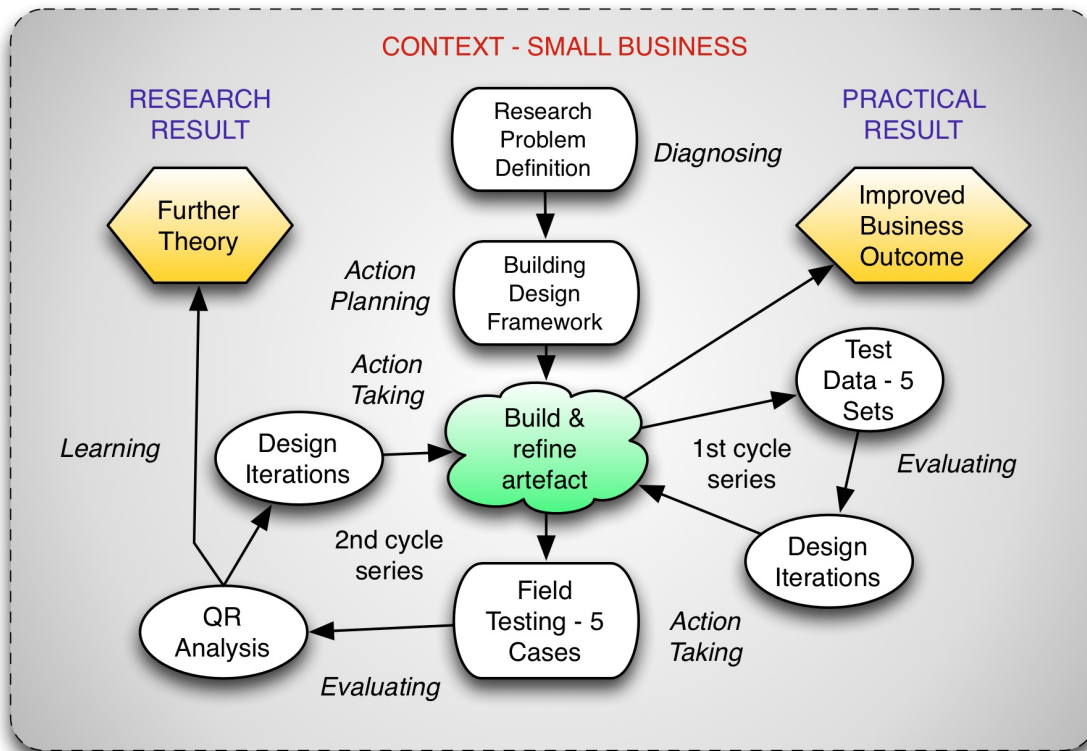
“share important assumptions regarding *ontology*, *epistemology* and more importantly *axiology*” (p. 336).

(Para-phrasing from Cole et al.’s conclusion.) “First in the case of *ontology*, both research approaches assume that the phenomenon of interest does not remain static through the application of the research process. In the case of AR the organisational phenomenon undergoes change by virtue of the researcher engagement with the client (case participant) to bring about the desired changes. In the case of DR, an artefact comes into being through the application of the research process. Next the *epistemology* of both research approaches assumes a mode of knowing that involves intervening to effect change and then reflecting on that change. In the case of AR the intervention occurs in an organisational setting. In the case of DR the intervention occurs by way of envisioning and constructing an artefact that will bring about the desired change in the organisation. Finally, the *axiology* that both subscribe to is evident in the manner in which both value the relevance of the research problem and emphasise the practical utility and theoretical knowledge simultaneously.” (p.336).

The authors go on to comment that both DR and AR share the common philosophy of pragmatism (also Baskerville et al., 2004; Hevner et al., 2004) but do not align exactly in all respects. They therefore suggest improvements to both methods taking relevant points from each other.

## 3.2 Research Design

Having considered the four research approaches discussed above, the conclusion to be drawn for this research is that selecting just one of the methods will not suffice. There are elements of all four approaches that are applicable. The result is that a composite research method was selected as illustrated in Figure 10 below.



**Figure 10 - Research Method Diagram**

The overall cycle includes the elements shown in italics, that of *diagnosing* (problem definition), *action planning* (specifying the design framework/theory), *action taking* (building the artefact, carrying out field tests), *evaluating* (software design, functionality, impact) and *learning* (emergent theory) and iterating over the last three actions until the artefact is completed and the cases reach a saturation point where further data collection does not reveal any new knowledge. In carrying out case studies, qualitative analysis using an interpretive philosophy is included in the chosen method.

Explanation of the research design as shown in Figure 10 above follows. For clarity of the method an indication of the research time spent on each step is shown.

**Step 1 - Research Problem Definition - diagnosing.**

The domain for study is Australian small businesses defined as employing less than 20 persons. The problem identified is that of poor use of best practice management control methods in small business, which leads to less than optimum performance. A gap in the software tools that could assist these small businesses was identified. The method used was



to conduct a literature review to confirm the problem that was known to the author from prior domain experience. Following the literature review, a framework was developed to explain the elements that contribute to small business success – the Small Business Success Model. (Figure 8). Within the model, the two areas that were considered to need attention were that of the Business Model and the Financial Model of the organisation. These are the two sectors that are addressed in the subsequent action phase of the research design. (See Chapter 2 of the thesis.)

The approximate time spent on this phase was 8 months.

### **Step 2 – Building a Design Framework – Action Planning**

Following on from the Small Business Success Model an analysis of data flows within a small business was made in order to show how the new software (the IPC Model) is an adjunct to the accounting systems and that it derives its data from the General Ledger (Figure 11).

Following that a design framework for the software design, known as the Process for Management Planning and Control of the Small Business was developed (Figure 12, Chapter 4). The framework was then augmented with a set of principles that were needed to inform the software design. These principles were derived from domain knowledge, standard management accounting domain knowledge and selected management control practices that are used in large organisations that were considered to be applicable to the small business context. Some design principles were original ideas that underpinned the reason for the research. Part of the research *raison d'être* was to test the MCS Model embedded in the software for effectiveness in the small business.

The approximate time spent on this phase was one month.

### **Step 3 – Build and Refine the Artefact (IPC Model) – 1<sup>st</sup> Cycle Series**

The research approach used in this phase was that of Design Research. The software was built in small steps following the MCS Process Model (Figure 12, Chapter 4) and the design principles. In the first iteration the structure of the underlying database for the software was decided. Then the development process involved the creation of code for a particular functional aspect of the software, followed by desk tested using test data sets. From the test

results, the performance of the software was evaluated and the improvements to the software functionality were made – action following evaluation. There were frequent small iterations of this nature. The specific cycles that occurred are described in the records of the software building process (Appendix A).

The approximate time spent was 15 months.

#### **Step 4 – Field Testing in Five Case Studies – 2<sup>nd</sup> Cycle Series**

The research approached used in this phase was that of Action Research and Qualitative Research. It is important to note that the 1<sup>st</sup> Cycle Series and the 2<sup>nd</sup> Cycle Series were not entirely sequential. There was some overlap that occurred when as a result of field tests the 1<sup>st</sup> Cycle needed to be re-entered.

The MCS Process Model (Figure 12, Chapter 4) was used to introduce the IPC Model to each of the cases. Following the Actions Research approach the implementation was divided into sessions. Each session was considered to be an Action. During the sessions the researcher would take detailed notes of the software performance and take audio recordings of the dialogue that ensued between the case participants and the researcher. A detailed chronology of the Sessions with the Fitness Studio is shown in (Appendix C).

The evaluation phase took place after a session. There were two parts. The first was the performance of the software. If it was decided that the software needed modification, then action was taken to effect the change. The second was that recordings of the sessions were transcribed and the data plus researcher memo notes (if applicable) were entered into the NVivo™ 8 (QSR International Pty Ltd 2007) software. The qualitative data collected at this stage was not analysed. It was necessary to collect all the data and to complete the implementation process for all cases before analysis could begin.

This 2<sup>nd</sup> Cycle Series was repeated until all of the five cases were completed. The approximate time taken with this step was 15 months.

#### **Step 5 – Analysis of Data and Development of Theory – Learning**

In this phase the data collected in the research was analysed using NVivo™ 8 (QSR International Pty Ltd 2007). The method used was to systematically take each document and study the content. The aim was to look for instances that would help answer the

research questions. The process of coding and developing themes is described in detail in Chapter 6.

From this analysis a Theory of Adoption for the IPC Model was developed as shown in Figure 87 in Section 6.4.2.

The approximate time taken for this step was 9 months.

### **Step 6 – Improved Business Outcome**

This step is the practical result expected from the research process. Small businesses that meet the criteria for adoption of the IPC Model (as per the IPC Model Adoption Theory, Figure 87) should experience increased control of their businesses and improved performance.

## **3.3 Software Development Process**

In Chapter 2, the Conceptual Model for Small Business Success was developed and two specific areas were identified as being required for effective planning and control in small businesses. These were the development of the Business Model and the Economic Model that includes the forward projecting Financial Model and Performance Measurement. With these in mind, the specific design principles for the software were developed. These are discussed in detail in Sections 4.1 and 4.2.

This section describes the method adopted for the building of the software (based on the model for planning and control) with the purpose of illustrating the advantages accrued by using an iterative approach and a high level language based software development package.

The method adopted for building the software was influenced by three factors. These are:

- Firstly, there was the selection of the FileMaker Pro 10 Advanced® development platform, which includes a high level, object oriented scripting language and full relational database functionality;
- Secondly, the fact that only one person (the researcher) was involved in the design and creation of the package; and
- Thirdly, there were five live data sets (the researcher's company, the researcher's private accounts, her superannuation fund, accounts for a private individual and the

business model for a former client) that were available for use progressively during the development process.

The method, therefore, was to simply follow the principles of design set out in Section 4.1 and build the program one step at a time. A full chronology of the program development is shown in Appendix A.

Whilst the researcher had some ancient scientific programming experience and a medium level knowledge of FileMaker Pro Advanced®, it was necessary to learn new techniques along the way (Cologon and Cohen, 2008). Most of the knowledge was gained from the help menus, reference books, training material and web based technical discussion blogs. Apart from a few email or telephone discussions with other developers, the program development was a solo effort. This fact probably accounted for a rather rapid development process, taking approximately 1¼ years of a three and a half year research programme.

A deliberate policy was to introduce test data as early as possible. There was a distinct advantage in that the software design is not dealing with large volumes of data. A second policy was to commence with the first case study as early as possible even though the full feature set of the program had not been completed.

The feedback from desk checking the known data sets and then from the first case study was invaluable in building a robust and reliable tool. Experience with the different data sets ensured that the program was executed in many different ways under many different scenarios. The constant iterations (55 versions of the software evolved during the period of the research programme) allow for increasing the sophistication of the package in a user driven fashion.

### **3.4 Choice of Case Studies and Data Analysis Method**

“Qualitative research is best if you want to study a particular subject in depth .... however, it is often difficult to generalize to a larger population. For example, three in-depth case studies of three organisations ... a sample size of three does not count for much in statistical terms. Three cases are no better than one. However you can generalize from qualitative research to theory, and you can generalize from just one case study or ethnography.” (Myers, 2010, p.9 for the quotation and Klein and Myers, 1999, Yin, 2003 regarding generalizations from one case study.)

However, Eisenhardt, (1989) comments: “while there is no ideal number of cases, a number between four and ten cases usually works well” (p.545). She goes on to suggest that “with less than four cases, it is often difficult to generate theory with much complexity” (p.545). The decision regarding the number of cases to include in this research was:

- Firstly, based on the aim to develop theory from the cases;
- Secondly, the pragmatic consideration of time allowed to complete the research; and
- Thirdly, the knowledge based on the literature review (Chapter 2) that small businesses have as one of their characteristics the problem of not having a formal planning and control culture in their organisations.

From these considerations at least four cases should be studied to allow for the development of meaningful conclusions. At the beginning, the researcher was also aware that there was a possibility that one or more of the cases selected may not yield as much data as some others. It was not possible to presume at the outset that all cases would want to embark on a full installation program and/or actually adopt the IPC Model. For all these reason the decision that five case studies had the highest probability of yielding sufficient data to answer the research questions.

The selection of case study companies was influenced by the fact that the software design called for generality, in that the software tool should work with any organisation that maintains a valid accounting system. This is why the cases are quite different businesses operating in different markets. The only criterion for selection was that they employed less than 20 FTE persons. In order to be unbiased in the selection, there was no attempt beforehand to enquire as to the nature of their business systems, the computer operating platform, the type of accounting system being used or to what extent they were implementing planning and control. If the selection was made using cases that had attributes that were thought to favour implementation of the IPC Model, then the effect of the intervention would not be able to be validly measured. Such a policy could be criticized as introducing bias to the research process.

As the context for the research is small business, the company needed to employ less than 20 persons. Eisenhardt, (1989) offers advice regarding case study selection. She advises focussing efforts on theoretically useful cases but also retaining theoretical flexibility. The concept is to tease out from the cases a rich data set that may enhance the prior theoretical

presumptions. In this research by not specifically selecting ‘favourable’ cases (ones that were pre-disposed to the concept of planning and control or the ones that already had a planning and control system in place) it gave the research the theoretical flexibility that Eisenhardt (1989) recommends. Valuable understanding can be obtained from both adopters and non adopters of the software.

In this case it was important not to bias the sample towards those companies that were particularly predisposed to using the software. The aim was to see if the software had an influence on the way the business is run. However, it is not possible when approaching an unknown company for the first time to know about their management practices or to have any idea of the impact of the software.

The method chosen was one of selecting interesting but different businesses that were favourably located for time efficiency reasons. There was no prior knowledge of their management practices, the brand of accounting software used or the computer operating system. The initial approach was for the researcher to explain the general aims of the research programme and to ask if the OM was interested to be a participant. (Several businesses declined for various reasons. In one case, the IPC Model had to be augmented to accept data from a different accounting package.) A total of seven businesses were approached and five accepted the offer to be part of the research programme. Of the two companies that did not join the programme, one was in the throws of restructuring and did not have the time and the other was reluctant, as he did not have a “good head for the figures”. This was interpreted that he did not understand accounting.

Thus, case selection depended on size of business and interest in being a participant.

The role of the participants was to take part with the researcher in the AR cycles, which in this study are called “sessions”. The sessions did not take the form of a pre-prepared questionnaire. They were structured in one sense in that the IPC Model inherent process as explained in Section 4.1.2 Figure 12 was followed. When setting up the software tool and going through the process of mapping and describing the business model, the case participant would meet with the researcher on a weekly basis. Sometimes pressure of work or travel would interfere and sessions needed to be rescheduled. Each session was recorded and the researcher would make notes during the session. Typically a session lasted from two to three hours.

There was one exception to not using a questionnaire approach. A questionnaire prompted interview was conducted with the Fitness Studio OM in order to augment the data collection process. The interview was in some sense a trial and although the responses were included in the data collected, the technique was determined not to be necessary for the other cases. A transcription of the questionnaire and the responses received is shown in Appendix D.

As well as recording the sessions, a detailed chronology of observations was written up following each session and many of the recordings were transcribed. Once the setup process and the initial predictions were complete, the sessions reverted to monthly. A total of 62 sessions took place, involving 182 contact hours. Details of each session and the data collected are reported in Chapter 5 where the action and events in each case study are reported. Each business had their own IPC Model data file, a copy of which was retained by the researcher. Where appropriate successive versions of the IPC Model data files were retained for data preservation and backup reasons.

From the regular working sessions with the case study participants a set of 30 source documents were produced. These consisted of transcriptions of working sessions, the researcher's field notes and memos and the financial data collected and retained in the IPC Model itself. These data were analysed using the software tool NVivo™ 8 (QSR International Pty Ltd 2007). The researcher did not take any courses in the use of the NVivo™ software as its function was self-explanatory. The data in NVivo were exported to Excel™ for further analysis, sorting of data and the development of graphical representations on many occasions. There were 10 iterations of the data analysis procedure before a final theory emerged. The results of the analysis are explained in Chapter 6 of the thesis. In this research the Eisenhardt (1989) method as described in her Table 1 (p.533) for building a theory from the five cases studied and the methods of Stauss and Corbin, (1998) for developing theory 'grounded' in the data were adopted.

The data collected was both qualitative and quantitative as explained earlier. The theory-building process began "without a theory under consideration and no hypothesis to test" (Eisenhardt, 1989, p. 536). There was no pre thinking about concepts or themes or specific relationship between concepts prior to meticulous coding of all of the data collected. The exception to this approach was that the researcher was of course aware of the content of the prior literature studies and the research questions. In that sense the enquiry of the data was directed.

**The first phase** of data analysis was the preparation of a detailed write-up of each site as is presented in Chapter 5 of the thesis.

Triangulation was made possible by use of multiple data collection methods – transcription of dialogues between the participant and the researcher, business planning and performance financial data recorded and retained in the particular IPC Model computer data files for each case, researcher field notes taken during the sessions, memos prepared after the sessions and emails. “Triangulation made possible by multiple data collection methods provides stronger substantiation of constructs and hypotheses”, (Eisenhardt, 1989, p.538).

**The second phase** was “open coding” taking each case separately so that the researcher became “intimately familiar with each case as a stand-alone entity ... as the process allows the unique patterns of each case to emerge before investigators push to generalize patterns across cases” (Eisenhardt, 1989, p.540).

The process of “open coding” meant that each of the 30 source documents (‘Sources’) were carefully examined and interesting words, phrases or paragraphs were coded in NVivo™. These highlighted pieces of text are called ‘references’ in this thesis. In NVivo™ they are called “free nodes”. The process of coding a reference allows one or more sub-concepts to be recorded against that reference. For example: a sub-concept may be “Interest in doing the Business Model”.

**The Third Phase** is to analyse the lists of “free nodes” or sub-concepts that have been coded and look for groupings that could be construed as being similar. These groupings then become concepts or in NVivo™ language “tree nodes”. In this phase of the analysis all the free nodes are allocated to their particular tree node or concept. It was useful at this stage to use Excel™ to assist with the sorting and allocation of the references. At the end of the third phase, there were 919 references, divided into 53 sub-concepts that were then allocated to 11 categories or concepts within 3 main themes.

After studying the 11 categories or concepts, it became apparent that these concepts could be allocated the three main themes that are described in Chapter 6.

**The Fourth Phase** in the qualitative analysis method was to examine through NVivo™ whether there were any cross linkages between the references. What this means is that a particular piece of text may be allocated to several different sub-concepts, which indicates



that possibly there is a linkage between them that could indicate a theory developing from the data. NVivo™ allows the user to form matrices between the main concepts. In this way it is possible to see if there has been an overlap in the coding and whether it is valid, perhaps, to merge two themes into one or to explain the linkage in terms of theory. This process is repeated many times until a logical theory and the appropriate linkages emerge. In this research there were 56 examinations of various linkages before it was possible to develop a Concepts Relationship Diagram, Section 6.4.1, Figure 77.

The description above outlining the four phases in the analysis of the qualitative data is the method that was used to conduct cross case analysis.

The participants were not involved in the analysis of their data. None of the cases was made aware of the other cases as the information collected was commercial-in-confidence.

### 3.5 The Role of Theory

The question to ask here is what kind of theory one can expect to emerge from this research? To determine where this work sits in the IS discipline, reference is made to Gregor (2006) who provides an essay on “The Nature of Theory in IS”. She points out (p.613) that the act of developing theory in research work is what separates academic work from that of practitioners and consultants. Her paper seeks to classify theory in IS and to do this she uses five basic categories: (1) theory for analysing, (2) theory for explaining, (3) theory for predicting (4) theory for explaining and (5) theory for design and action

This work would be Type V: The Theory for Design and Action. (As per Roman numerals used later in the paper.) “This type of theory says *how to do* something”. On pages 628-9 she cites many examples of design theory that fit into Type V. Of relevance is a ‘*systems development approach*’ (Nunamaker et al., 1991; Walls et al., 1992, 2004) and later ‘*design science*’ (Hevner et al., 2004); ‘*design theory*’ (Markus et al., 2002); and ‘*action research*’ (Baskerville and Wood-Harper, 1998).

The second question to ask is what constitutes a contribution to knowledge with theory of this type. Gregor (2006) refers to the work of March and Smith (1995), Hevner et al. (2004) and Gregor and Jones (2007) who set out the criteria as being ‘*utility to a community of users, the novelty of the artefact and the persuasiveness of claims that it is effective*’ (p.629). This statement aligns exactly with the aims of this research.

The theory that emerges as a result of this research is presented in Section 6.4. The method adopted to develop the theory is described in this section.

In this research it can be argued that there are three theories embodied in the action. They are not expected to be substantive or generalizable in this type of research. They are specific to small businesses and to the particular software developed. However, as shown in what follows, the final IPC Model Adoption Theory (Section 6.5, Figure 87) that was developed as a result of the case studies is the contribution to knowledge that is expected to emerge from the research effort.

A theory is proposed at the beginning (the Business Success Model) that informs the design theory (the second theory) for the artefact (the IPC Model). , The artefact is built and field tested and then a third theory (the IPC Model Adoption Theory) is developed based on the results of the research. The hybrid research method used follows the schematic shown in Figure 10 above.

The design of the artefact relies on existing theories of database design, usability, the organisation of data structures and the established accounting rules that are embodied in management accounting theory.

The final artefact embedded design becomes the theory of the MCS that has been developed especially to meet the needs of the small business. (The second theory.) This theory is embodied in the process that is presented in the initial principles of the artefact design, in section 4.1 and those that follow in Chapter 4.

The third theory is the generation of knowledge that is expected when the artefact is implemented in each of the case studies. The method adopted is to seek an emergent behavioural theory of the effect that the artefact has on the organisation, and in particular the OM and/or the OM's management team. In this case, the research delivers a behavioural theory, (The IPC Model Adoption Theory), developed in a stepwise fashion from the data analysis in Section 6.4.1 and then finalised in Section 6.5).

### **3.6 Ethics and Intellectual Property**

This research has followed the RMIT Code of Research Conduct. Since human subjects are involved only in the recording of interviews and company information, it is classed as Risk

Level 2 – Minimal Risk. Ethics approval was granted following confirmation of candidature.

No publication of the case study results reveals the identity of the participants. A statement of confidentiality and purpose of research document has been prepared for each case study and all participants have been issued with the document and have acknowledged their agreement to participate. In each case, permission to collect data was also sought.

According to normal RMIT practice, the intellectual property rights in any software or publishable material produced during the research programme remains with the candidate.

### **3.7 Methodology Summary**

This IS research programme aims to have a useful practical outcome. The choice of research method is guided by the scope of the activities needed to achieve the main objective of improving the planning and control function in small businesses.

In this Chapter, three recognised IS research approaches and a philosophical perspective were examined. These were:

- Action Research (AR) or Canonical Action Research (CAR);
- Design Science (DS) or Design Science Research (DSR) or Design Research (DR);
- Qualitative Research related to Case Studies (QR); and
- Interpretive Philosophical Perspective.

Each approach was discussed with reference to how the particular approach was in line with the aims of this research study. The result was the creation of a composite research approach that gives the necessary rigour and structure to the repeated iterations taking place during the research. These iterations are those of diagnosing the problem, action planning, action taking, evaluating and learning. (See Figure 9).

The composite research design as shown in Figure 10 in the chapter, has three such cycles in the overall design. The first is the software design cycle, the second is the case study cycle, and the third is the cycle used to analyse the qualitative data collected from the case studies in order to develop a theory of IPC Model adoption. What is important in the research design is that the learning taking place within each iteration feeds back to the building and refining of the artefact (IPC Model).

In this chapter the amount and nature of data collected was described and the principles and methods adopted for analysis of these data were discussed.

In the next section, Chapter 4, details of the IPC Model design principles and its functionality are revealed.

## **Chapter 4    Software Design and Functionality**

In accordance with the research design developed in the previous chapter, this chapter first establishes the design principles for the small business MCS and then describes the functionality that was built into the software tool. The reasons behind the design decisions are progressively explained throughout the chapter. The design principles postulated here form the basis for the MCS and the parameters required to build the software. These design principles are part of the ‘action planning’ that precedes the ‘action’ of building the software.

It is important to emphasise at this stage that the software design is an hypothesis that is to be tested in the five case studies. The design emanates from a mixture of sources that include largely the author’s domain knowledge, standard management accounting practices that are essential for the integrity of the design and the Business Model concepts of Morris et al., (2006). The detailed design that includes data handling structures, layouts, style, work flow and the like are the author’s own original work.

The process flow chart (Figure 12) that is described in what follows represents the steps needed to operate the IPC Model. From a computational point of view the software design is not specific to a small or large business or to business type. Any entity whose financial status is recorded using standard accounting practices where the final output is the Balance Sheet and Profit and Loss reports, is able to use the software.

The IPC Model design has the attributes of being standardised in a format that is proposed to be suitable for small businesses. It is more complex than a custom spreadsheet forecasting model but much less complex than the planning software that is designed for the large business. Large businesses require software that is written to cater for multiple users with multiple data sources. The IPC Model has only one data source and that is the Trial Balance taken from the accounting system. The software is largely computational in nature and in that way is ‘simpler’ than the software designed for large businesses.

The software is written to guide the OM of the small business towards an improved MCS. It is important to emphasise that software itself is not the MCS. The MCS evolves through the use of the software and it is this aspect that the research needs to test in the case studies.

The software was built using an iterative DR process as outlined in the Research Method Diagram – Figure 10 in Section 3.1.4. Desk testing on live data took place early in the process. Results were evaluated and details of the design developed/modified as needed in a progressive fashion. The first case study was commenced well before the prototype software was completed, so that learning from a live situation could be built into the software. Fortunately the underlying database design and the use of an advanced software development tool allowed this iterative process to take place without the case study participant being inconvenienced. Any usability problems, which were observed during a session were able to be evaluated and the software amended before the next session. Feedback from the case study user was noted and modifications made to the software as appropriate.

Throughout the explanation in this chapter, examples of usage considerations are drawn from the five field case studies and the five desk tests. A major part of the design is the focus on building a tool that encourages the OM to regularly carry out a structure planning and control function. The philosophy behind this is to make the tool easy to use, flexible in application, a good “look and feel” and functionally suitable to the small business context.

How these considerations are achieved is discussed in what follows. Setting out to design a piece of software is just as important as designing artefacts for human use anywhere, as is explained in Norman’s (1988, 1998) classic work on ‘The Design of Everyday Things’.

There are valuable lessons to be learnt from case studies where IS tools were not designed with an adequate knowledge of the context where the tool is to be used. Markus and Keil (1994) argue that the approach to systems building should take into account design of the business process involved and ensure that implementability is built in.

Bunker (2001) has taken an anthropological perspective. She argues that software systems are tools in context and should be created with knowledge of the cultural as well as the structural context of the user’s environment.

There are two cases of interest (Bunker et al., 2007, 2008). Although both cases related to software introductions in large companies, the findings are relevant to this design exercise. Firstly, the tools tend to inherit the cultural values and assumptions of the toolmaker’s culture. In this research the toolmaker has domain knowledge of the tool user’s culture and this is an advantage in the design process. In the first case (Bunker et al., 2008) a software

based time management system was being introduced. One section of the organisation adopted the software and the other did not. In the second case there was a misalignment between the skill set assumed by the toolmaker and the skill set of the tool users.

Secondly, it is quite relevant to consider the alignment of skills assumed by the toolmaker and those found in the user population. For example, the software necessarily has accounting theory as its underlying discipline. The challenge therefore is to design the tool to assist users to bridge any 'skills gap' that may exist – poor knowledge of accounting for example. It was not clear at the design stage whether this goal could be achieved in practice and is one of the reasons for the research.

The second case examines the reasons why the implementation of a self-service purchasing system in a large company was not successful. Bunker et al., (2007) found that the software aligned with the structural characteristics of the company but not with the practice characteristic of the users. Users were expected to learn the software through on-line tutorials, which did not match the people orientation of the workforce. The low intuitiveness of the software reflected little consideration of non-specialist users. This case is interesting as there were multiple reasons for the unsatisfactory implementation of the software. Some of these reasons were obviously errors in management implementation policy and in the reliability of the software. Nevertheless, the lessons from the case are that design does not stop at software functionality. The implementation process to ensure adequate user training must be part of the design process. These factors are considered and explained in this section of the thesis.

The purpose here is not only to explain the technical/accounting aspects of the software design but to explain the why behind the design decisions from the point of view of having the software be a catalyst to encourage the OM to embark upon the hard work of planning and controlling effectively in his/her business. The software itself needs act as a motivator for the OM (Markus and Keil, 1994).

The first part of the chapter therefore, develops the design principles that define the framework for the software tool's functionality.

The fact that the software development process involved extensive desk testing and then field-testing was a deliberate effort to avoid some of the design errors described in Norman's book (1988). The more the designer is exposed to user input, the better. The first

case study was commenced as early as possible to provide feedback on the user experience. The aim was to pay attention to cultural aspects of the context, user skill-set and the implementation process.

Following determination of the design principles, (Section 4.1), the complete structure and functionality of the program is explained (Sections 4.2 to 4.9). Then the software is compared with other similar software in Section 4.9. Following that, considerations relating to the implementation and adoption of the software are discussed.

By the way of background, the software package took 15 months to write. The time spent included researching alternative design techniques, learning the development software, desk testing with five different live data sets and then implementing early versions in the first case study. There are 62 screen layouts and 150 scripts in the final prototype version, known as version 55.

The discussion in this Chapter includes references and observations from the Case Studies, which either confirmed a design parameter or principle or influenced the design. This approach is in keeping with the iterative process used in the DR method adopted during the software development phase.

## **4.1 Design Principles for the IPC Model**

The literature review in Chapter 2 has confirmed that when planning and control has been used, the business' performance was shown to improve. A survey of available software shows that the needs of small businesses are not really addressed. The questions now to ask are:

- What does the small business really need for its software based MCS? (Section 4.1.1);
- What are the characteristics of the software that will make it effective in use? (Section 4.1.2); and
- How does the software design lead to the OM achieving goal oriented control of the business? (Section 4.1.3).

Before addressing each of the above three questions, it is necessary to consider the way in which the “user” will go about the planning process using the software. The targeted “user”,



in this case is the OM, his/her accountant or his/her bookkeeper or another owner who is taking the role of working “on” the business. Based on the characteristics of small businesses (Sections 1.2 and 2.1.1), the software is designed for the single user. It can be thought of as the **user’s own personal “thinking tool”**. (Author’s terminology.) This concept is in contrast with the systems for large organisations that have many users dealing with different aspects of the planning process.

The concept that the small business can be planned and controlled by the OM or the OM and one or two other individuals distinguishes the software markedly from that designed for the large business. The software addresses the business issues at a summary level that is represented by a simplified, but complete General Ledger. The hypothesis of this research is that the small business can be controlled with this reduced level of detail.

The most common function of this small business MCS will be stepping through the GL Line Items one at a time, examining past data and predicting the future in line with pre-determined goals. As the small business environment is often changing, it is not considered practical to produce the equivalent of the annual static budget as is the classic approach. Rather the philosophy to be adopted is one of a continuum that is forward looking over a selected time period. To allow for changing circumstances the predictions can be modified as necessary based on past experience and knowledge of future conditions. (In some texts, this concept is referred to as a ‘rolling budget’. (Anthony and Govindarajan, 2007; Sivabalan et al., 2009; Bogiages, 2004)

When a month is completed and the actual results are known, the past becomes useful information but in a sense is “dead” information. The data is important as input to the control process but only in the sense that it is one data point in a series of past data points. The real control of the business depends on review and adjustment of the future outlook that incorporates any adaptations that are needed.

Following the input of the current month’s data, it is essential that the predictions are immediately adjusted to re-start from the current month’s data point otherwise the future outcome of the predicted cash position will be meaningless. (Author’s design specification. This differs from traditional budgeting where the time series for the budget remains separate from the time series for the predictions. (MYOB™ and BBooks™ software; Anthony and Govindarajan, 2007))

Thus the terminology adopted here refers to “predictions” and “forecasting” and not “budgeting”. In a sense the first time a plan is prepared and the predictions made, the outcome is like a budget but that budget takes on the nature of a prediction once a month passes. Predictions surely will be modified as time progresses. The original budget is maintained only as a moving annual total in the financial reports for comparison with the current annual forecast. Thus less emphasis is placed on the “old” budget. The focus is mainly on the current forecast. (Author generated design principle proposed to suit the practicalities of the small business context).

There is an exception in that the software uses the term “Capital Budget” as in this case the list of acquisitions and disposals of capital assets is a static budget, even though the time period for the action regarding a particular asset item can be amended at any time. This fundamental principle will be elaborated as the thesis progresses.

*Hence the fundamental premise of the small business IPC Model design is the notion that the accounting system, whilst essential for compliance and record keeping, only tells the user what has happened in the past. On the other hand the IPC Model design encourages the user to be forward looking and tells the OM where the business is headed.*

#### **4.1.1 Design for the Needs of Small Business**

The most important principle for the design of a small business MCS is *simplicity and ease of use* as seen by the user. This principle is based on the premise that the software needs to encourage the OM to implement an MCS or an improved MCS. If the software is complicated and hard to use small businesses, that currently do not spend time working ‘on’ their businesses will not be attracted to using the software. (Gerber, 2001; DeLoan and McLean, 2003; OM characteristics, Section 2.1.1).

The term “simplicity” in this sense refers to the simplified General Ledger that is used to construct the predicted financial model of the business each month. The term “ease of use” refers to the familiar Excel™ spreadsheet look and feel of the predictions and financial reports section of the program, the navigation that is similar to the familiar link system of the common internet browsers, the ability to address different sections of the software in a non sequential pattern and the in-built structure that facilitates the user’s operation of the software. These design parameters are author driven and are not based on other software designs.

It is necessary to achieve adequate functionality without apparent complication. The way this is achieved is through standardisation that will allow widespread application and a clearly defined way of working for the user. Whilst it is possible to design a software artefact that meets all possible requirements like the Cognos package, the art of this design is to focus on essential functionality that suits the context of most small businesses. Small business OMs are not usually trained in financial modelling and being resource poor do not tend to use external expertise to develop complicated models of their businesses. (OM Characteristics, Section 2.1.1).

Allowing the user extreme flexibility only serves to confuse. (OM characteristics, Section 2.1.1). For example, allowing multiple formats for reports and performance measurement does not suit the user who is not professionally trained in financial performance measurement techniques. How do they decide what reports are appropriate for them? This is why a standardised approach has been adopted.

However, this does not preclude building into the software, elements of the expert or intelligent processes. It is just that such “clever” processing algorithms should be hidden from the user. This is the paradox in the design principles for this type of software. The software is designed to guide the user in a set process that is adequate for the context and at the same time it may contain internal sophistication that should be transparent to the user. (Author design principle.)

Early in the research program the software was given the name, the “**IPC Model**” where IPC stands for “**Intelligent Planning and Control**”. In the original concept for the design, it was envisaged that the system would incorporate elements of intelligence or expert system as explained in Section 2.5. In examining the software currently used in the market, these terms and their application are being applied in some systems.

In the case of the IPC Model, the word “intelligent” can also mean that the user should do their planning and control in an “intelligent” fashion. The case study users liked the name and often were heard calling the software “The IPC” for short.

The first place to start in setting out the principles of the design is to consider the data sources. It may be argued by some that a budgeting/forecasting program should be an integral part of the accounting system.

However, in the small business context there are many different software packages already being used, of which MYOB™ and QuickBooks® are in the top five most

popular (Top Ten Reviews, online 2011). Indeed these software packages have been designed for primarily a single purpose. They are relatively simple in function and construction but have met the need. Some of the accounting packages have a budgeting facility but it can be awkward to use. (Based on the author's personal experience.)By having a software package add-on, the design can be specifically built to purpose without interfering in anyway with the accounting software that has proven its worth and is well established.

The principle of design is therefore that the IPC Model is able to extract past data from any of the commonly used small business accounting packages.

In a small business, as in a large organisation, there are many sources of data. Figure 11 on the next page shows a typical financial data distribution. The figure has been constructed from the author's domain knowledge.

Referring to the left hand side of the diagram, operational data such as details of inventory items, customer static and transactional information, work-in-progress inventory, sales details and the like are recorded in the accounting system.

The principle is that all financial data flows find there way to the General Ledger in the accounting system.

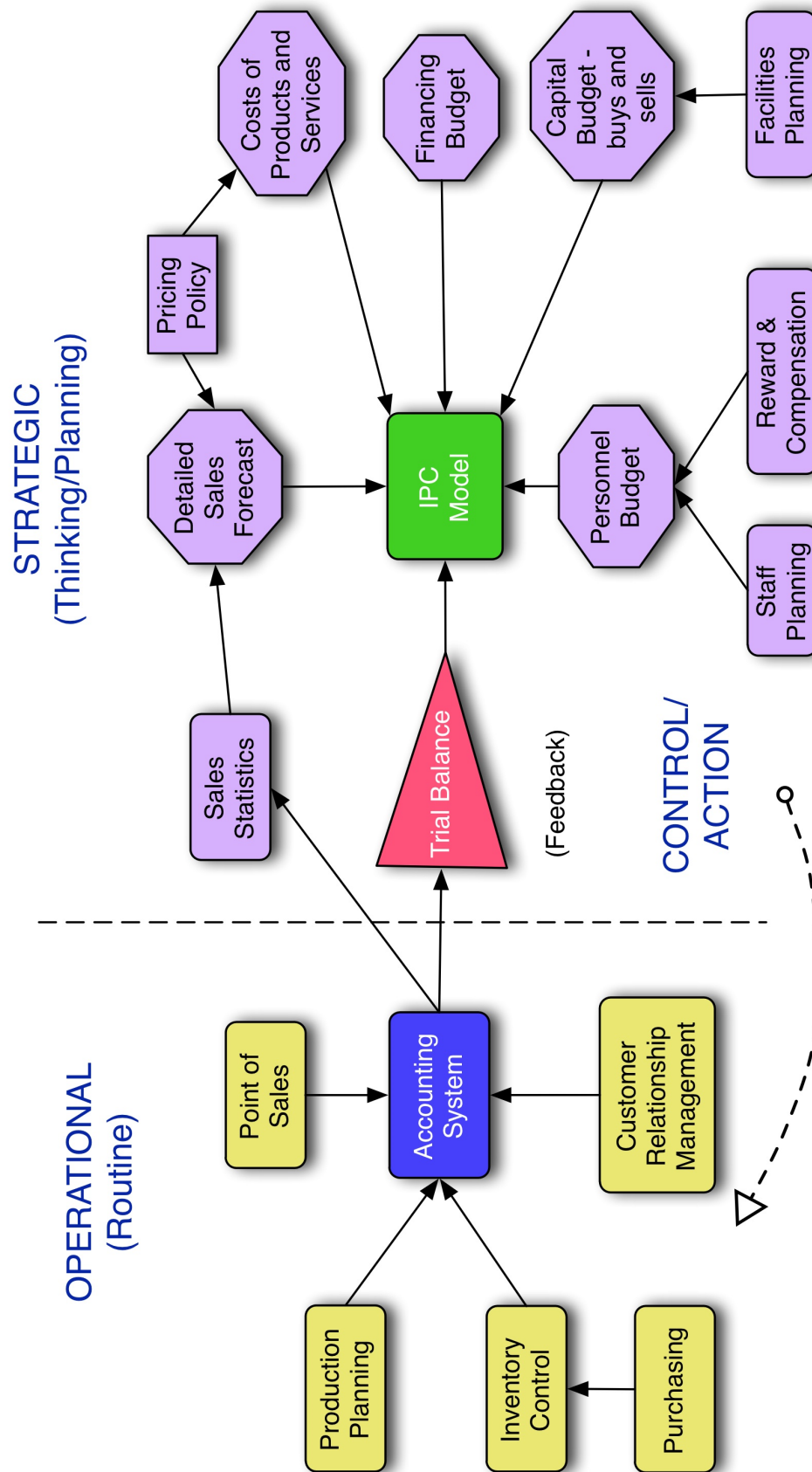


Figure 11 - Data Flows and IPC Model Interface with Accounting System

The accounting system processes that data to produce the basic financial reports, the Profit and Loss Account and the Balance Sheet. They are derived from the Trial Balance, which is a debit and credit list of all the General Ledger accounts that are currently being used by the organisation. Thus this becomes the main source of data input to the IPC Model. The principle here is that the main data processing is carried out by the accounting system and the IPC Model takes in the summary results.

These Trial Balance data become the record of past results that is needed as a guide to preparing forward projections, for performance measurement and for comparing actual results with predicted.

The right hand side of Figure 11 shows the strategic information flows that are typically generated. Such functions as detailed sales forecasting, pricing policy, personnel budgets, capital budgets and finance planning are part of the planning process. In a fully featured IPC Model, these functions would most likely be included as part of the model. In a research environment, however, only the capital budget is included as decisions relating to assets are significant in the planning process, affecting depreciation, assets, profit or loss on sale of assets and financing considerations.

To meet the requirement for generality among small businesses a generic General Ledger (Generic GL) is included in the program. The design that follows on from this decision is that the General Ledger in the business's accounting system is mapped to the Generic GL. There are, however, two important principles involved here.

One is that in order to simplify the planning process, it is proposed that rather than allow infinite detail in drilling down into the General Ledger that characterises the Cognos type systems (designed for large businesses), the small business system allows for aggregating accounts in the General Ledger as the mapping process occurs. This has the effect of reducing the number of accounts that need to be "planned" and satisfies the need to simplify the process without compromising effectiveness. The degree of aggregation is of course up to the user and can range from no aggregation to considerable aggregation. This feature is a key design difference from the classic planning and control software systems designed for large businesses..

The second principle is that by using the Generic GL concept, the program is structured in such a way that reporting, algorithm generation, analysis routines and the like are built around a known accounting structure. A Generic GL also allows for future expansion of

functionality and the generation of expert system analysis routines without any major change. (This concept has been used by Profix® and Whitebirch® but was not derived based on their application of the concept.)

Both the *mapping concept* and the *aggregation concept* mean that the past data accumulating in the IPC Model aligns exactly with the accounting system. The design therefore has the effect of asking the user, “what is really important here?” and in time the user should gain confidence in reading and understanding the aggregated data knowing that it is tied accurately to the ultimate source of financial information, which is the business’s accounting system.

Thus the IPC Model software design is not inherently data intensive but should have the ability to allow for quite sophisticated computational algorithms.

#### **4.1.2 Design Characteristics to Make the Software Effective**

This section introduces the Process for Management Planning and Control of the Small Business that is shown in Figure 12, which follows. The ‘Process’ describes the steps taken by the user to operate the IPC Model each month. The argument of this thesis is that by taking these steps and using the software as designed, the small business owner will be able to plan and control the business effectively.

The process itself does not differ from that used in a large business. It is not specific to a small business. It is the classic step-by-step process that any organisation management team should take to plan and control their activities. What is specific to the small business is the design of the IPC Model. The premise is that as a result of using the IPC Model the OM is encouraged and assisted in effecting planning and control that is suitable for the small business. This premise is tested in the Case Studies that are described in Chapter 5.

The first step in any planning process is to set goals and then strategies for the organisation. In order to provide a pre-defined structure for setting goals and to assist in the exercise of thinking strategically about the business, it was decided to draw on the work of Morris et al. (2006) by using his schema in a questionnaire format to guide the OM in defining the business model. This questionnaire format is the adopted method to be tried in the research program to see if it is a sufficient and workable method to express the main goals of the business. The reason for selecting the work of Morris et al.

(2006) is that their method of formulating the Business Model is an extension of a great deal of previous work and that it is supported by empirical research. It provides an excellent structured approach to defining the Business Model, which had the advantage of being able to be incorporated into a software format. The method for defining the Business Model is applicable to both small and large businesses. The user of the method as incorporated in the software does not need to understand the underlying theory of Business Model formulation. They need only complete the questionnaire. This format is suited to the small business owner that is not trained in management practices.

Having completed the business model, the IPC Model design calls for the OM to set targets for twelve performance factors. Although there are a large number of financial performance measuring ratios from which to select, (Horngren et al., 2009, p755) by following the principle of simplicity, the minimum number required to be effective was considered to be twelve. (These are detailed in Section 4.5.3 Table 7.) This design decision is based on the author's domain knowledge and common accounting practice (Horngren et al., 2009; Anthony and Govindarajan 2007; Weston and Brigham, 1974; Vatter, 1971; Shillinglaw, 1961). It is hypothesised that these particular twelve measures are sufficient for small business control. The test of sufficiency comes from the Case Study analysis that is reported in Chapter 6.

By setting target measures that align with the business model, the OM is encouraged to be forward looking in his/her approach to performance measures. Scoring of performance is therefore measured against the strategic targets set for at least six months into the future. This measure attempts to avoid the observations of Chenhall and Langfield-Smith (2007) that budgetary systems in large organisations can be inflexible, internally focussed and backward looking. The facility of being able to change targets as required takes away the problem of inflexibility. The principle is that the OM is measuring performance against his/her own predictions and not against targets set by a top management authority with possibly different views of acceptable performance.

The main output from the planning process is the cash flow over the forecast time period. Not only the level of cash, but how it is expected to behave into the future. This design principle gives quite a different perspective compared with the traditional annual budget where the cash level is shown to be a single value level at the end of the year. The budget is calculated for a fixed period of time and the cash balance is a snap shot of the situation at the end of the budget period.



Cash is calculated mathematically in the IPC Model rather than using the standard accounting method as explained in more detail in Section 4.6.2 that follows.

The planning process inbuilt in the IPC Model requires the user to consider each GL Line Item one at a time, examining the past data and then predicting the future using a series of “methods” to calculate the predicted values. Each GL Line Item is supported with graphical representations of past and future data, showing such data interpretation tools as trend lines, moving averages, variation percentages and the like.

When all the GL Line Items are predicted except for the cash and Year to Date (YTD) Profit and Loss, the user runs the final calculation method that determines the future cash flow. (Author derived design feature.)

The cash outcome is an immediate indicator showing whether the predictions as a whole make sense. For example, if there is an unexpected excess accumulation of cash at the end of the planning process, then there are many reasons for the effect. It could be correct of course. On the other hand sales could be too optimistic, gross profit margins may be too generous, there could be an error in calculating inventory levels or changes in the capital structure of the company may not have been predicted correctly. This sort of inference drawn from the results as calculated in the IPC Model is an example of the difference between the IPC Model design per se (the calculations) and the user’s need to think about the reasons for the results. In this example, the user is carrying out a thinking exercise that is part of the MCS of the business.

Normally, the user needs to find the desired cash flow outcome via a series of iterations after examining the GL Line Item predictions. After several iterations the user becomes aware of the key drivers of the business and what needs to be changed to generate the preferred cash outcome into the future. *This is where the program acts as a learning tool.* After practice and in time the user should become quite adept at predicting and with the control function coming into play, meeting those predictions with actual results.

It was at this point that consideration was given including an “ask the professor” routine that goes through a series of steps to test the predictions against known norms highlighting areas that do not make sense. Whilst this functionality is desirable it was decided not to include such a feature in the prototype IPC Model. A similar feature is included in the Budget Maestro® software. In this research programme, the “professor” role was played by the user or by the researcher.

Design of the IPC Model process adopted in this research is as shown in Figure 12 that follows. This process defines the main framework for the design that achieves the stated aims. In particular, it achieves the aim of invoking control via a regular feedback mechanism. The cycle chosen is monthly.

A hidden advantage with the implicit process built into the IPC Model is that by regularly comparing actual performance against predicted, there is a Generic GL line by line check on the accuracy of the business's accounting system. Bookkeepers are prone to making posting errors for example and these are apparent when the monthly Trial Balance is input into the planning model. (Author domain knowledge.)

A key design characteristic in implementing the MCS process that is guided by the IPC Model software is to ensure that the monthly activity of bringing in data from the accounting system and processing that data is fast and efficient. The Trial Balance data is transferred easily via an Excel™ spreadsheet. The next step is to run the forward-looking financial reports noting that the new start month for predictions is the next month following the Trial Balance input month.

Then the IPC Model analyses the results based on the twelve performance factors. A scoring system is used to indicate to the user how close the actual results were to the predicted. Graphical representation of all twelve performance factors is provided together with trend lines, moving averages and variance as required. (Author initiated design feature.)

The software design principles assume that the planning horizon will vary from one OM to the other, but that for most, a 24 month time period will suffice. (Author design decision based on past experience and judgement.) For example, some will want to look only six months ahead and have 18 months worth of past data. Whereas others may have a longer term planning view and use just 6 months of past data and plan 18 months ahead. These are the most likely extremes envisaged for the design.

As the months pass by, an imbalance between the number of months of past data compared with predicted data will begin to arise. For this reason, the system of "sliding periods" is included as part of the design. The user can move forward in time in three or more monthly intervals. Once new months are added to the GL line items, new projections need to be made for the additional months. (Author derived functionality not found in comparable software. See Table 9, Section 4.9)

The design therefore clearly keeps the user focused on the future in a dynamic and flexible way which should in time engender a control culture and give the OM the tool he/she needs to drive the business in the direction desired instead of having to be reactionary in the sense the business appears to be driving the OM.

The essence of the research is to find out how these design characteristics are received in practice via the Case Studies. There is a distinct difference between what the business should do as opposed to what is actually does.

**Process Flow Chart – Figure 12.**

The following is a brief explanation of the process that is followed in using the IPC Model. There are five basic phases. The steps taken in each phase are as shown in the flow chart:

1. Start-up Phase;
2. Business Model Development;
3. Forecasting Phase;
4. Control Phase; and
5. Monthly Cycle.

Apart from the steps taken in each phase, the flow chart shows how the feedback mechanism occurs after each month's data is analysed. If the results are as planned then there is no further action and the OM waits until the next month.

If the results are not as expected, then the flow chart shows that either the predictions need to be revised (with the OM noting what actions need to be taken in the business to effect the changed predictions) or the outcome may require a re-think about the business model. In this case, there may be a fundamental strategic element that needs review and changing. If this is so, new performance measures need to be set and the predictions amended. Once this is done, the OM waits until next month to see how the results of the changes pan out.

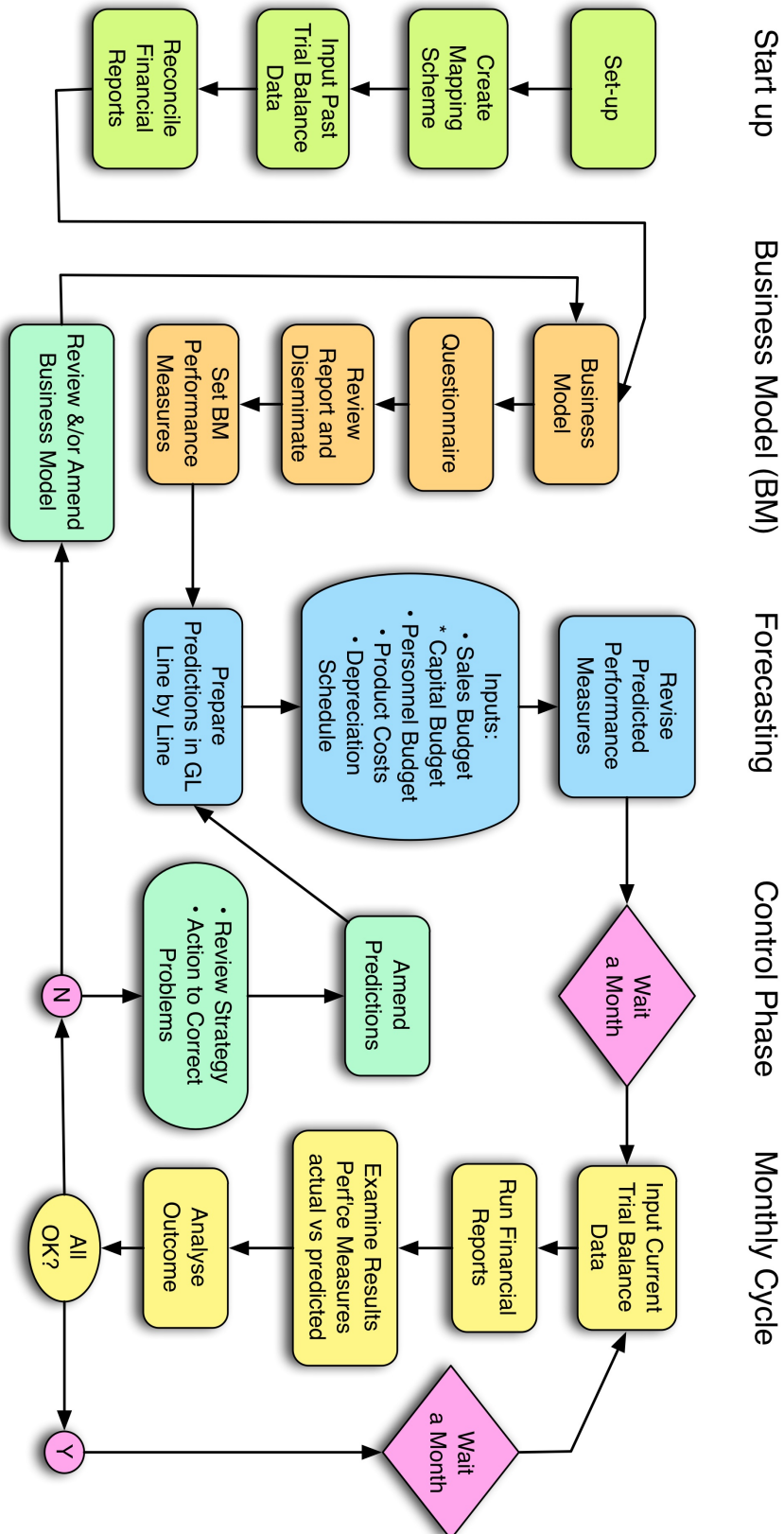


Figure 12 - Process for Management Planning and Control of the Small Business

### **4.1.3 The Principle of ‘Continuous Adaption’**

The IPC Model is designed to facilitate control of the business. Control is achieved when the OM reacts to measured business performance compared to what was predicted.

Where you have a philosophy of ‘continuous adaption’ the measure of performance is tied to how closely the monthly business outcome is to the current planned outcome. The performance result is actually a measure of the effectiveness of control of the business. If the business performance is tracking closely to the predicted “guideline” then this is an indication that the business is operating “in control”.

This is why the IPC Model design measures performance against prediction and not other factors such as some industry standard or a budget measure that was set up to twelve months previously.

In the case where performance is not tracking according to prediction, the OM implements “adaptive control”. This means that the reason for the diversion in performance needs to be determined and then the predictions revised. The ability to continually revise the predictions as needed is key to gaining control of the business. One important principle is that corrections should be made as frequently as necessary.

The principle of allowing adaption (or change) applies equally to the business model as well as to the financial aspects of business control. The forgiving (or changing) business model of Fiet and Patel (2008) is relevant especially when the business is a relatively new venture.

The IPC Model process of ‘continuous adaption’ is not considered to be ‘bad practice’. The forecast is revised as and when necessary. In fact it is not unlike the rolling forecasts used by large organisations in tandem with their annual budgets (Sivabalan et al., 2009; Bogiages, 2004).

In some respects the principle of continuous adaption is a defence mechanism to counter the known problem that forecasting is a difficult activity prone to failure from time to time through outlier events and the fact that extrapolating patterns and relationships from the past to the future cannot necessarily provide accurate predictions (Makridakis et al., 2010).

The argument for the IPC Model approach, however, is that a prediction that takes into account simple past trends and current known extraneous information is really the best

that the OM can do. The thinking process involved in making the prediction is the most important step. The best attempt today of a future outcome is better than no prediction at all. Predicting a few months ahead is always easier and tends to be more accurate than predicting longer term. Makridakis et al.'s (2010) solution to the problems of making predictions revolves around using “the three A’s” – accept, assess and augment.

The principle behind the philosophy of ‘continuous adaption’ in the IPC Model aligns in many ways with the Makridakis et al.'s (2010) advice. The OM needs to accept that uncertainty is a fact of life. He/she can use past trends and additional external knowledge to make predictions understanding that the prediction may be wrong - being aware that people consistently underestimate uncertainty. With these realities in mind the OM has the option each month to change the predictions – to adapt to actual events. In fact the OM should be expecting to make changes and adjustments each month. This philosophy or way of working is the mechanism adopted to achieve control of the business.

A frequent cycle of plan – measure – change – plan – measure and so on is designed to suit the small business context where change is a fact of life. This principle is discussed further in Section 4.6 where a link to the concept of control limits to track performance is made (see Figure 23 taken from Davis, 1974, p. 360).

#### **4.1.4 Summary of the Design Principles**

Writing a piece of software for a particular purpose is analogous to writing a book. At the beginning the author needs to decide what to write and what message needs to be conveyed. In this work the author of the software made the IPC Model design decisions alone. These decisions led to expression in the design principles that were followed as the software was written.

The principles are based on the design decisions made by the author. The grounds for the design decisions are based on the author’s considerable domain knowledge (more than 30 years experience managing and controlling small businesses) and the desire to provide a tool that had the potential to encourage improvement in management planning and control in small businesses. As noted in the previous section, not all of the IPC Model design is original. The design follows known accounting principles and management practices and has taken into account the literature research that was conducted prior to establishing the design principles for the software.

The other similar software that is compared with the IPC Model in Section 4.9 did not act as inspiration in deriving the design principles. It was important to this research that the design decisions be as original and purpose driven as possible without resorting to imitation of others. Investigations (Chapter 2 and Section 2.6) revealed that the similar software that is currently on the market is not being generally used or accepted by small business. It is therefore not logical to design a new piece of software around the principles of existing software that is known not to be meeting the needs of the small business sector.

On the other hand the IPC Model design principles may not be any more successful in being adopted by the small business sector. The only way to find out is to build the software according to the design principles and then test the design in the field. In this research, the testing of the software takes place in five case studies.

There are 17 software design principles that are summarised in what follows. The first two principles relate to the user and the remainder relate to the inbuilt design process. There is no reason why the design principles could not be used by a large business as well as a small business. One would envisage the application being used only by top management, however.

1. The software tool is designed as a **personal ‘thinking tool’** for the OM of the small business;
2. The design needs to exhibit **simplicity and ease of use** from the user’s perspective even though it may have internal complexity;
3. The **inbuilt management control process** is designed to encourage the OM to **focus on the future** and to respond with actions when necessary to maintain control of the business;
4. **Input data derives from the Trial Balance** exported from standard small business accounting systems;
5. The accounting system Chart of Accounts (COA) is simplified and mapped to the **Generic COA** in the IPC Model – the **mapping concept** and the **aggregation concept**;
6. The design is based on a **top down/exception reporting approach** where detailed data to transaction level can be found outside of the IPC Model in the accounting system;

7. Allow users to define their **business model** as a means to state the goals and objectives of the business and to set performance targets;
8. Use a maximum of **12 Key Performance Factors** – targets set to align with the business model and actual performance measured against predictions;
9. **Predictions involve stepping through each GL Line Item** one at a time, using program assisted ‘**Methods**’ to derive the required values;
10. **Graphical time series** available for all GL Line Items showing trend lines, variation and moving averages for both predicted and actual data;
11. To engender a realistic forward looking approach, predictions start from the month that follows the latest actual data taken from the accounting system – sometimes referred to as ‘**rolling forecasts**’;
12. A **24 month time horizon** with the split between actual and predicted data being the user’s choice;
13. Adjustments can be made to ‘**slide**’ the **24 month time period along** in three monthly intervals – the ‘**sliding periods**’ principle;
14. **Predicted Cash Flow is calculated as the ‘balancing item’** when all other predictions have been completed;
15. **Monthly review** of actual results (including 12 Key Performance Factors) versus those predicted with **graphical time series** to help with analysis;
16. Flexible **capital budgeting** down to individual item level allows automatic posting of planned asset acquisition and sale events; and
17. The design encompasses the principle of ‘**continuous adaption**’ (or revision of predictions) that aids in the **control** of the business.

## **4.2 Design Functionality and Structure**

When a small business is introduced to the IPC Model, there is a defined process (see Figure 12 in Section 4.1) that needs to be followed to make sure that the organisation is able to assimilate its new and revised MCS with the best possible results. This process is followed as a way of introducing the different elements of the software package.

As always with software development, it is necessary to make design choices that define the attributes and character of the tool and its applicability to a particular task. The software



system is a prototype, but with all the necessary functionality to be able to test its effectiveness in case studies. In the prototype sometimes the layouts are designed purely in a functional way rather than using a design that would fit in with the competitive look and feel that pervades the software market. Nevertheless, the software is functional and has quite an acceptable presentation. As it has reached the stage of being “grammatically correct” and its operation is robust without unexpected exits, it can be described as being of “beta” standard. Figure 13 below shows the home page screen shot of the software.



**Figure 13 - IPC Model Home Page**

The main sections of the program are accessed via links that are listed on the left hand side of the screen. On most other pages, selected links are repeated running along the top right hand edge of the screen.

It is not necessary to access sections of the program in any particular order. It is also unnecessary to fully complete a section before attending to another part of the process. For example, in the predictions section, buttons are provided, that indicate if a particular GL Line Item is “done” or “not done”. The same functionality applies to the specification of the business model. The questionnaire is provided in sections and these can be completed in stages without affecting other parts of the program.

The software is delivered in a “run-time” version for either Macintosh OS X or the Windows 7 environments. A system of client account numbers and password protection are included. In each copy of the program identified with an account number, there can be multiple companies/branches or business units, each with their own password entry to ensure data separation. Multiple copies of the program can be open at the one time so that comparison between different companies/branches can be made visually, although it is important to always enter data into the one master file. Eventually it is planned to include a routine to provide consolidated accounts that draw on data within each company/branch.

Program updates are relatively easy for the user to implement. In prototype/beta format, the user is sent a folder via email within which there is a partial clone version of the latest software. The user needs to open the clone and select the menu item called “Program Update” where, on activating the update process, the user’s current data from all companies/branches is imported into the clone. That file is renamed with the new version number and moved back into the user’s folder. The user then has two files in the folder, one with the old version number in the file name and the other with the new version number in the file name.

The program comes with a beta version licence agreement and contact details should help be required.

### **4.3 Start-up – Review of Business Current Status**

The start-up process is an important step in ensuring that the IPC Model is properly integrated with the business’s accounting system.

According to the Contingency Theory of Management Accounting (Otley 1980),

*“... there is no universally appropriate accounting system which applies equally to all organisations in all circumstances” (p.413).*

The contingency theory proposes that the accounting system needs to match the design of the planning and control system. Otley (1980) goes on to examine the effects that technology, the environment and organisational structure have on the design of an accounting information system (AIS). He points out that:

*“It is also evident that the AIS comprises only one part of the control structure of an organisation. An organisational control strategy will involve organisational design considerations, the provision of other management information and planning and control systems, additional to the AIS”(p.420)*

In the small business context the accounting system is most often designed to match compliance needs, particularly those demanded by the taxation system. The point is that the accounting system should be set up to serve both the planning and control process and external compliance needs. Many accountants distinguish between what they term the “management accounts” and the “taxation accounts”. The accountant often maintains the taxation accounts separately to the management accounts. The two coincide with regard to bank reconciliations. They are essentially the same set of accounts but presented differently. This policy seems to be an unnecessary duplication of effort that could be avoided with some careful thought in the accounting system design.

Even though the design of the IPC Model copes with the fact that the accounting system in most small businesses will not align, as it should, with the needs generated by organisational design nor to those of the planning and control environment, it is preferable that care is taken during the set up process to ensure the existing accounting system makes sense. At this time, the user needs to be prepared to make some changes that ensure that the accounting information is organised to meet planning and control needs.

Thus, there needs to be a review process before beginning. The need for a review process was not apparent at the beginning of the research program. It was only as a result of the case studies that the poor organisational state of the case accounting systems was observed. This is an example of the “learning” loop coming into play during the project. It is apparent that the main reason for the accounting system not being well organised was that the business was not carrying out formal planning and control. They were not using their accounting system for that purpose.

There are two areas that need to be considered. Firstly the Chart of Accounts (COA) and secondly the benefits of being able to aggregate similar accounts for planning purposes without needing to compromise the detail that is contained in the accounting system.

Another consideration is to determine if the accounting system makes sense. An example (drawn from the field cases) is the recognition of which accounts are classified as equity and

which are classified as owner’s loans. If a balance sheet is showing negative net worth, then either the business is insolvent or the owner’s loans provide the necessary equity to support solvency. The accounts are an unrealistic representation of the real situation is the owner’s loans are not shown as equity. If the company is forced to close, then the owner’s loans will be called upon to meet liabilities. The accounting system therefore needs to be changed and certainly should be changed to make the interface with the IPC Model sensible. If the two differ, then it is difficult from a practical point of view to reconcile one with the other after Trial Balance data entry.

### 4.4 Setup Process – Mapping Scheme

The setup process is the most critical step for the business. This is where the company’s financial reporting structure is melded with the IPC Model’s Generic COA (Figure 14 below). This is achieved by constructing the Mapping Scheme.

GENERIC CHART OF ACCOUNTS									
Gen Code	cComposite Generic Code	Generic Acct Name	Group Prefix	Group Type	Report Section	Group Code	cRpt Comp Gen Code	Totalling VariableName	Pre-set Method
6000	16000	**BALANCE SHEET**	TITL	1	5	100	516000		
6002	16002	ASSETS	HEAD	1	5	102	516002		
6005	16005	Current Assets	SUBH	1	5	104	516005		
6010	16010	Total Cash	CASH	1	5	110	516010		15
6020	16020	Undeposited Funds (Cash till)	CASH	1	5	110	516020		
6025	16025	Deposits Paid to Suppliers	CASH	1	5	110	516025		
6022	16022	Exchange Rate Gain/Loss	CASH	1	5	110	516022		
6030	16030	Accounts Receivable	ACCR	1	5	120	516030		9
6035	16035	Less: Provision for Doubtful Debts	ACCR	1	5	120	516035		
6040	16040	Accrued Income	ACCR	1	5	120	516040		
6042	16042	Voluntary Withholding Credits	ACCR	1	5	120	516042		
6044	16044	ABN Withholding Credits	ACCR	1	5	120	516044		
6050	16050	Clearing Account	ACCR	1	5	120	516050		
6060	16060	Inventory Purchased	INVY	1	5	130	516060		
6061	16061	Inventory on Consignment 1	INVY	1	5	150	516061		
6062	16062	Inventory on Consignment 2	INVY	1	5	150	516062		
6063	16063	Inventory on Consignment 3	INVY	1	5	150	516063		
6070	16070	Inventory (Finished Goods)	INVY	1	5	150	516070		14
6080	16080	Work-in-Progress	INVY	1	5	150	516080		
6100	16100	Investments	SUBH	1	5	190	516100		
6110	16110	CMT's	INVT	1	5	200	516110		
6120	16120	FTD's	INVT	1	5	200	516120		
6130	16130	Shares	INVT	1	5	200	516130		
6132	16132	Re-valuation of Shares to Market	INVT	1	5	200	516132		
6135	16135	Managed Funds	INVT	1	5	200	516135		

?
ASSETS
LIABILITIES
EQUITY
INCOME
COGS
EXPENSES
SORT ALL
9:43:16 16/02/2011

Figure 14 – Part of the IPC Model Generic Chart of Accounts

The Mapping process takes some time and the OM can benefit from consultation during this phase. Fortunately it only needs to be done once in most cases. The OM needs to be

somewhat ruthless in carrying out the aggregation process. The aim of the IPC Model is to simplify the process of forecasting and measuring performance not to complicate it. The program design assumes that OM's would be generally pleased to be able to change the classic accounting chart into something that is less detailed and more directed to the management needs of the business.

The Mapping Scheme is created by exporting the company's chart of accounts, from MYOB™ or QuickBooks® to Excel™. Three additional columns are added manually to record the company ID (allocated as part of the distribution security coding – each “client” has a login username and password), the accounting group code, 1 = Assets, 2 = Liabilities, 3 = Equity and so on, and then the Generic Account number.

Whilst such a procedure appears to be quite straightforward, it takes quite some time to make sure that the Mapping Scheme will work for a particular company. Accounting systems generally have too many roles to play and those roles are often incompatible. Their main function is to keep track of the money flows within the company and dissecting those flows into various accounts. The accountant is concerned that there are sufficient accounts to allow the tax return to be completed responsibly and to comply with government regulation. Bookkeepers sometimes need to allocate transactions that are unusual and do so by opening new accounts (or classification) when possibly an existing account could suffice. By the time that the OM sees the accounts, they can be quite complicated and not really useful to help him/her run the business. (Source: Author domain knowledge.)

The Mapping process encourages the aggregation of accounts. For example, there may be several bank accounts. For planning purposes, the OM may be quite satisfied to know the total cash forecast and not a forecast for each individual bank account. Similarly, there may be funds invested in several term deposits, each with their own individual accounts, but for planning purposes, the category is “fixed interest securities” presented as one GL Line Item. The equity accounts are often long and complicated and these can be aggregated into the one account known simply as “owners' equity”.

Once the Mapping is completed, the Excel™ spreadsheet is imported into the IPC Model where two internal database tables are created to contain the information. Figure 15 below shows a typical Mapping Scheme layout. The two internal tables are known as the Predictions Table and the GL Line Item Table. Where accounting system accounts are

aggregated into the one Generic account number, the Memo in the Predictions Table shows all the original account numbers and their account names for future reference. This is shown in Figure 29 in Section 4.6.1 below.

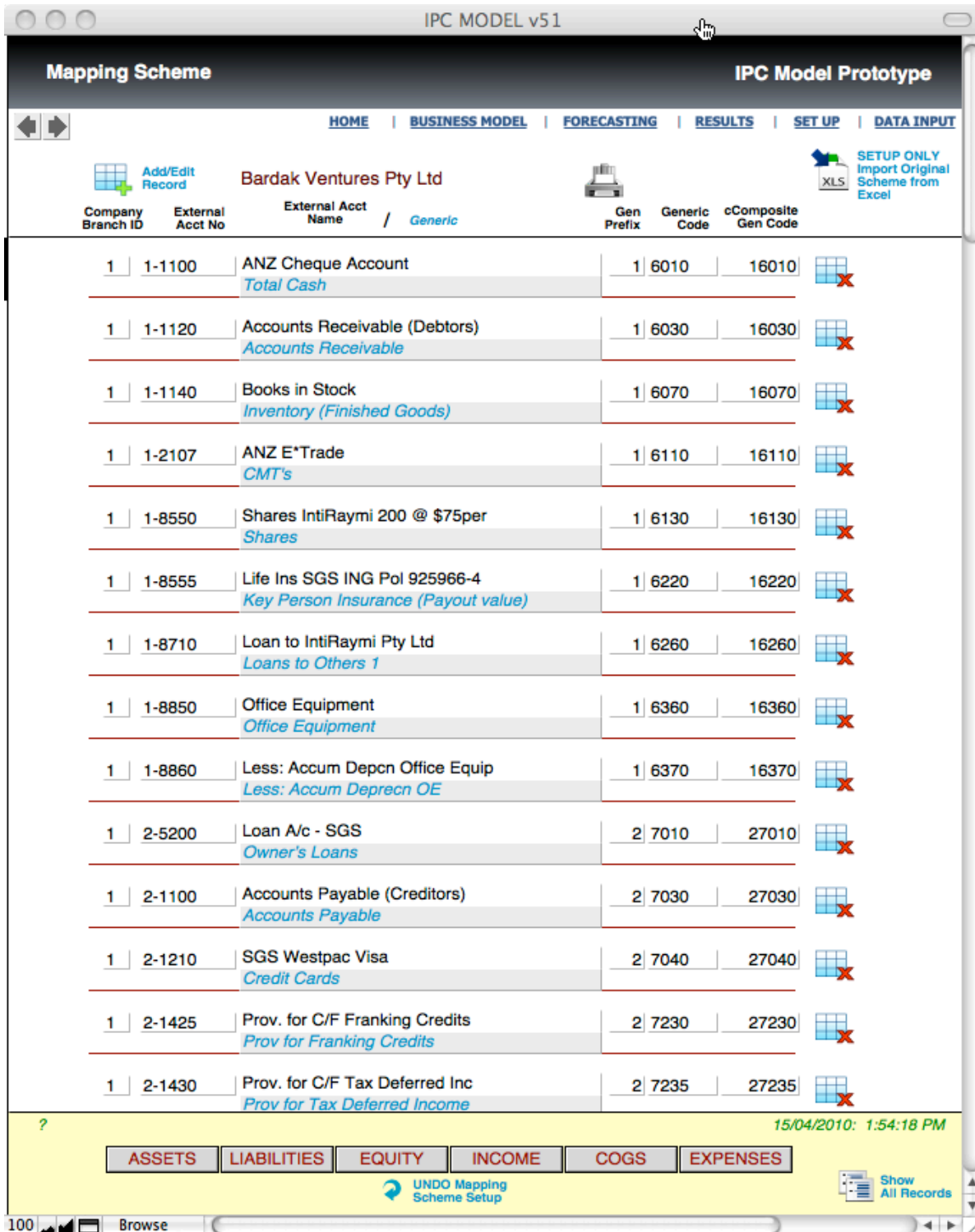


Figure 15 - Example of IPC Model Mapping Scheme

The next step in the start up process is to import a suitable number of months of past Trial Balance data from the accounting package. The IPC Model does this easily and quickly using scripts to read the Excel™ files that are exported from MYOB™ or QuickBooks®. With reference to the Mapping Scheme, each month is processed into the aggregated form – called the “Simplified Trial Balance” in the software.

The last step in the start up process is to check that the past data balances with the accounting system. In the IPC Model, the user generates the Financial Reports that initially will only show the past data without predictions, but it is essential to check that the Balance Sheet balances and that the total equity as shown in the IPC Model is the same as that for the accounting system in just the same way that it is essential for the accounting system to balance with the bank(s).

The only way that the Financial Reports will not balance with the accounting system is if a particular month is subsequently changed in the accounting system but not in the IPC Model. The solution is simply to re-import the revised data for the month in question. The Financial Reports section of the program is rerun and the YTD profit and loss and the cash balance recalculated. This ensures that the changed data merges properly with the older data.

At this point it is interesting to note feedback from the field case studies. In one case when doing the Balance Sheet predictions, I noticed that the OM had chosen to include quite a large number of superfluous accounts in his Mapping Scheme. This meant that many of the line items were blank. It also had the effect of giving the impression that there was a lot of work to do to complete the Balance Sheet predictions when in fact the relevant line items were few.

The OM argued that he did not want to leave these particular accounts out in case they are needed in the future. This attitude arises from dealing with typical accounting systems where (in early days of computer generated accounts) it was difficult to add new accounts at a later date. In the context of the IPC Model, the attitude defeats the aim of trying to simplify the forecasting (prediction) process.

What is even more interesting is that my own attitude was the same when I first used the IPC Model in the desk-testing environment. I wanted to put in all my MYOB accounts (or nearly all of them) into the Mapping Scheme. It was as though I needed all those little

insignificant accounts as a security blanket, possibly not being sure of the effectiveness of the IPC Model as a planning and control tool. Now, after using the Model for 18 months or so, I realise that it is better to simplify the accounting COA for the IPC Model given that its purpose is to facilitate the planning process.

When the IPC Model is tied to the accounting system, no detail is lost. In fact, the aggregation of accounts (where it makes sense) helps in the forecasting process. This is especially true when one refers to the past data in aggregated form via the GL Line Item pop-up window (with Graph). After a while the aggregated data becomes the norm and the OM's mental picture of income, cost and balance sheet items revolves around the aggregated figure and not the detail that is contained in the accounting system. The only time that it is necessary to return to the accounting detail is when the figure moves outside of reasonable prediction ranges. Then the accounting system is the source of the detail. It provides both the information about each separate account that may be part of the IPC Model aggregation as well as the ability to "drill down" to each of the original transactions, if necessary.

If after some time the OM decides that further aggregation would make the MCS easier to use, the Mapping Scheme and associated tables can be "un-done" and the process re-started with a new Mapping Scheme. In this scenario, the predictions need to be re-done and the existing data re-run through the simplification process. This actually does not take a significant amount of time especially if the revised system is started after sliding periods along when the predictions need revising anyway.

At a later stage, as the IPC Model is being used in its monthly cycle, the user will come across times when a new General Ledger account has been added to the accounting system. In this case, the IPC Model input routines recognise this addition and provide a polite error message report. The user then goes to the Mapping Scheme and enters a new Mapping for the additional account. This is a simple straightforward step. Normally, there is no need to re-enter the Trial Balance data as the program picks up the new Generic account number and the data can be processed (aggregated) as normal.

## **4.5 The Business Model Hub**

The Business Model section of the IPC Model is introduced via the "Business Model Hub" shown as Figure 16 below.



For any MCS to be effective, management needs to set realistic goals for the business/organisation's performance into the future. Morris et al, (2005, 2006) have proposed a practical method to describe the qualitative aspects of the business's reason for being, given its particular technological and environmental setting, position in the value chain and its competitiveness (Porter, 1985; see Figure 6, Chapter 2).

**Business Model Hub** IPC Model Prototype

HOME | FORECASTING | RESULTS | DATA INPUT | SET UP | FINANCIAL REPORTS

### Developing and reviewing your Business Model

*This section is the hub from where the Business Model for your enterprise is developed and amended as required. A tutorial is (planned to be) provided to explain the theoretical basis for communicating the factors that underpin the business's core logic and strategic choices to ensure a sustained profit stream in a competitive environment.*

*Select any of the six components (sections) of your Business Model and complete the questionnaire. The questionnaire is a scratch pad where you develop your ideas section by section. When you complete a section, press "save" in the upper right corner. This saves your work to the Business Model report ready for viewing and printing. The section is automatically marked as "done" here in the hub. Revisions are made by going to the section restoring previous data and revising the questionnaire. You can then re-save the new work which will overwrite the earlier work.*

*When all sections are complete, view the resulting Business Model via the "Your Business Model" left-hand link or directly from the questionnaire in the top left hand corner. You can keep a record of your progress via the "Status" field below.*

4 Case 3 - Fitness Studio BUSINESS MODEL STATUS Not Completed

#### QUESTIONNAIRE SECTIONS

1	Factors relating to the offering	▶	To do
2	Market factors	▶	To do
3	Internal capability factors	▶	To do
4	Competitive strategy factors	▶	To do
5	Economic factors	▶	To do
6	Personal/investor factors	▶	To do

[Reset](#)

**Figure 16 - The Business Model Hub**

The IPC Model design draws on the work of Morris et al. (2006, Table 2, p.36) translating that work into a multiple-choice questionnaire for the OM to complete. In this section the discussion of Morris et al.'s work referred to in Section 2.1.2 is expanded as it relates specifically to the IPC Model.

There are three sub-sections in this part of the program as shown on the left hand side menu. These are: a) the questionnaire, b) the presentation of the business model and c) the business model parameters.

The first two items in the list are essentially qualitative in nature. The third item in the list needs some explanation. The idea behind the "Business Model Parameters" is that once the first two sections have been completed, the OM should be able to quantify the organisational goals in terms of twelve performance factors that have been selected as being the most

important for a typical small business, keeping in mind the need to design for simplicity and essential effectiveness. The three-stage process is discussed in more detail in the following sub-sections.

Note that reference has been made to a “Future Section” that provides a tutorial explaining what the business model is all about and how it can help in clarifying the strategic thinking behind the business. In a commercial version of the program, this facility would seem to be essential, as in the small business context, the strategic thinking can be more tacit than overt and unless the OM is trained in management principles, the benefits of articulating the firm’s business model may not be apparent.

Certainly the experience with the cases studied was that there was less interest in this part of the planning process than in the other parts. Nevertheless all the participants found it easy to complete the questionnaire and to produce an acceptable statement of their business model. (Refer to Chapter 5 that describes each Case Study in detail.)

The users understood the function of the performance factors and could refresh their knowledge of each factor’s meaning. The IPC Model design was not a problem. However, when it came to knowledge of their own business’s characteristics, setting specific values for the selected performance factors, caused some to be somewhat hesitant. The reason behind this hesitancy was that at the beginning of the planning process, they did not know their performance factors as they were not being measured elsewhere in their business. They really did not know what targets to set.

The IPC Model design caters for this eventuality, which was expected given the small business context and the characteristics of the OM as described in Chapter 2. The business model parameters (performance factors) can be reviewed and set or reset at any stage and can be refined as more information becomes available from past data and from the planning process. Once these data are available, the program is able to provide six-month moving average performance measures from the forecast data that can assist the OM in setting targets for future performance outcomes. This feature is discussed more fully in section 4.5.3.

Despite the fact that Morris et al., (2006) report that there is not any generally accepted definition nor any accepted framework for capturing the entrepreneur’s business model they explain its use as follows:

*“The business model is used to describe a company’s unique value proposition (the business concept), how the firm uses its sustainable competitive advantage to perform better than its rivals over time (strategy) and whether, as well as how, the firm can make money now and in the future (revenue model)”(p. 28).*

Morris et al. (2005) set about developing a conceptual foundation that provides a rigorous framework to capture the essence of the firm’s business model. The framework is referred to as the MSA (Morris/Schindehutte/Allen) framework in the later (2006) paper. The idea is that the framework can be applied to any type of business venture as it provides a uniform, structured and generic approach.

After testing the framework on two companies, they conducted an empirical study in a randomly selected cross section of 500 high-growth, entrepreneurial firms taken from INC. magazine. The business models were built up from web based published data on the firms concerned plus some direct contact. Three investigators independently examined each firm and differences resolved via group consultation or directly with the firm concerned.

What is relevant to this research project was the fact that the framework was used successfully to characterise the business models of over 100 different firms.

From the outset, the MSA framework seemed to be an ideal component of a software-based planning tool, where the setting of goals and definition of the business model are a necessary activity to be carried out at the beginning of the planning process. Thus a questionnaire type format and database technique of merging factors into a reporting structure was devised to allow the OM to produce a business model document with relative ease.

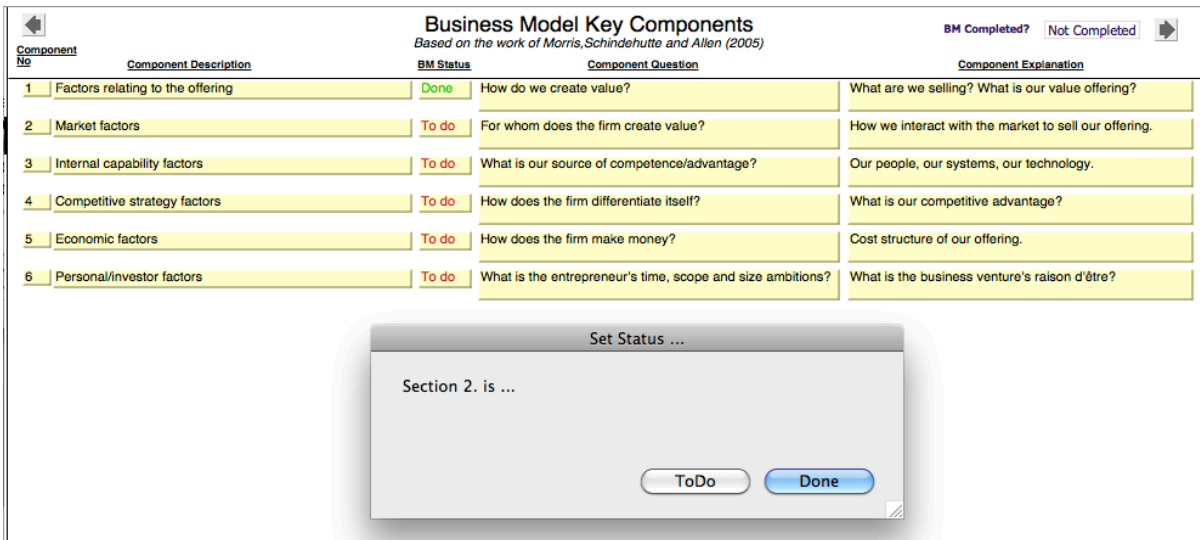
The other thought was that incorporating the MSA framework into the software tool could provide an excellent base for collecting data about company business models in another research situation possibly from a community of early adopters.

#### **4.5.1 Questionnaire**

This section is structured in a series of related tables that contain the elements of the MSA framework. There are six basic components in the business model. These are:

1. Factors relating to the offering;
2. Market factors;

3. Internal capability factors;
4. Competitive strategy factors;
5. Economic factors; and
6. Personal/investor factors.



**Figure 17 - Business Model Components (interpreting the MSA framework)**

Associated with each factor are a component question and a component explanation. These can be seen in Figure 17 above.

Each component is represented in the Questionnaire as a Section. For example in Section 1, Question 1.1 there are five questions to be answered. These five questions correspond with those in the MSA framework with suitable wording Adaptions. Refer to Figure 18 that follows.

**Figure 18 - Business Model Questionnaire Section 1 (Based on MSA framework)**

For component 2 (Section 2) there are five questions and so on. With each question a drop down menu suggests possible answers. Figure 19 below shows the questions for Section 2 – Market Factors – Question number 3. These illustrations are provided to explain the scheme that was developed.

**Figure 19 - Business Model - Market Factor Question 2.3 Choices (based on MSA framework)**

In Figure 20 below, an example of the completed questionnaire for Section 1 is shown. Note how the case study participant completed the comments section in quite some detail.

**Business Model Analysis** IPC Model Prototype Database

HOME | BUSINESS MODEL | FORECASTING | RESULTS | DATA INPUT | SET UP | FINANCIAL REPORTS

Questionnaire | Business Model | Back to Hub 4 Breathe Wellbeing Pty Ltd Save Restore Clear

**SECTION: 1** **How do we create value?** *Factors relating to the offering* *What are we selling? What is our value offering?*

---

**Question: 1.2** **The degree of product/service customization.** *Choose from list:*  
 standardised

**Add comments:** Our services have been refined over 3 years in the service provided, the way that the service is delivered and the pricing strategy of our services. For example we started out as a Membership business but quickly realised that this limited the accessibility of potential customers, so we broadened our product (service) range to include multipasses, casuals and direct debits and over-the-counter sales. The current range of large group, small group and private services regularly attracts 800 users per week. There is capacity for up to 1100 users per week.

---

**Question: 1.3** **Relative depth and breadth of product/service mix.** *Choose from list:*  
 narrow line

**Add comments:** A deliberately limited main service range but a number of sub-service choices. For example we offer Large Class (fitness type). These can be purchased at different prices depending on the method of payment (regular automatic weekly payment are the best and cheapest) or a 10 pass multipass or a single casual purchase (which is the most expensive).

---

**Question: 1.4** **Format used for delivering product/service.** *Choose from list:*  
 access to product (not product itself)

Figure 20 - Completed Business Model Questionnaire

### 4.5.2 Business Model Presentation

The output from the questionnaire is a one to two page descriptive narration of the firm’s business model. This output is in a format that could be conveyed to a board, bankers, venture capitalists or other of the firm’s stakeholders. From a software design perspective the user can see from the bold faced type, the questionnaire selections that were made to describe the business. The report is developed from the questionnaire and presented as is shown in Table 6 below.

MODEL COMPONENT	RELEVANT FACTORS	FURTHER COMMENTS
<b>Factors relating to the offering</b>	<p>We sell <b>primarily services</b> as opposed to primarily products or a mixture of both.</p> <p>The offering is <b>standardised</b></p> <p>and the scope is <b>narrow line</b>.</p> <p>Customers can purchase <b>access to product (not product itself)</b> via rental, licence or other arrangement.</p> <p>We <b>deliver services using internal resources</b>.</p> <p>Customers are serviced by <b>distributing directly to the end user</b>.</p>	<p>We provide a range of services which include: Large Group classes; Small Group; Private 1:1 and Instructor training.</p> <p>Our services have been refined over 3 years in the service provided, the way that the service is delivered and the pricing strategy of our services.</p> <p>A deliberately limited main service range but a number of sub-service choices. For example we offer Large Class (fitness type). These can be purchased at different prices depending on the method of payment (regular automatic weekly payment are</p> <p>We are a stand alone business. We did consider working with ABC but they under-valued our services and complicated the offer.</p>
<b>Market factors</b>	<p>Our market structure is described as <b>B2C (Business to customer)</b>.</p> <p>Our territory is <b>national</b>.</p> <p>Our customers are <b>consumers</b>.</p> <p>We supply into a <b>niche market</b>.</p> <p>The firm's success is driven by a focus on <b>ongoing relationships</b> with particular accounts.</p>	<p>Local for Large Group, Small Group and Private Classes. National for Instructor Education.</p> <p>Developing ongoing relationships is critical to our success.</p>

MODEL COMPONENT	RELEVANT FACTORS	FURTHER COMMENTS
<b>Internal capability factors</b>	<p>Internal competency in <b>both production and operations</b>.</p> <p>Advantage from our <b>selling/marketing</b> expertise.</p> <p>Advantage from <b>data mining capabilities</b>.</p> <p>Advantage from our <b>creative or innovative capability</b>.</p> <p>Advantage achieved through <b>financial transactions/arbitrage</b>.</p> <p>Advantage from supply chain management skills is <b>not applicable</b>.</p> <p>Advantage from <b>skills in managing networks</b>.</p>	<p>High quality and capable instructors. Experienced and self-starting reception and management.</p> <p>Very experienced in selling and marketing to our market. A load of experience (trial and error).</p> <p>We use [Brandname] as our main management and measurement tool. We have kept all customer records and customer behaviour since start-up.</p> <p>We constantly review our performance with an eye to creating greater capacity through technology. In the past 12 month 60% of our income has shifted from over-the-counter to online buying allowing us to reduce reception staff costs by 20%.</p> <p>We have a stable financial management system but prior to the IPC system it was hardly sophisticated.</p> <p>A major focus is on repeat sales and referrals so developing our networking is vital.</p>
<b>Competitive strategy factors</b>	<p>Differentiation from <b>other image factors</b>.</p> <p>Differentiation from <b>product or service quality</b>.</p> <p>Differentiation from <b>innovation leadership</b>.</p> <p>Differentiation from <b>other operational factors</b>.</p> <p>Differentiation from <b>intimate customer relationship/experience</b>.</p>	<p>We set ourselves apart by actually being distinctly different from competitors. No loud music, no corporate image. It is about the experience.</p> <p>High level of care and instruction in a high quality surrounding.</p> <p>There is no-one in Melbourne who is attempting to do what we do. We want to become a multi-site [fitness type] business.</p> <p>We are expensive but provide value for money and have evolved our prices in line with what customers will pay.</p> <p>This is very important.</p>

Questionnaire Business Model Back to Hub 4 Fitness Studio		
MODEL COMPONENT	RELEVANT FACTORS	FURTHER COMMENTS
<b>Economic factors</b>	Pricing flexibility is <i>largely fixed</i> . Revenue sources are <i>mostly fixed</i> . The underlying cost structure is <i>balanced between fixed and variable costs</i> . Sales volumes (invoice volumes) are <i>high</i> . Gross margins are <i>high (&gt;50%)</i> .	
<b>Personal/investor factors</b>	Aspirations for the firm are best described as a <i>growth model</i> .	The benefit of the original single site is to create a profitable model for multi site expansion.

**Table 6 – Screen Shots of Fitness Studio Business Model**

The software design, with the drop down selection lists for each section allows considerable flexibility in developing the MSA framework. Experience from case studies has been that the selection list is not rich enough. Whilst the overall structure appears to explain the business model well, the detail could be expanded.

In this way the work of Morris et al (2005, 2006) can be expanded. In time the effect of the modifications can be assessed to see what additional knowledge can be gleaned from the empirical studies.

The purpose of this section of the software is to encourage the OM and/or team to articulate their position in the market and to be aware of contingencies that may exist. This is an important step before beginning the planning process and setting performance measures. The outcome of the business model characterisation may also impact on the design of the existing accounting system and the Mapping Scheme as a pre-cursor to introducing the IPC Model to the business’s existing MCS.

However, the most important function of the design is to encourage reflection on the business status and overall goals.

### 4.5.3 Performance Factors – Business Model Parameters

This section of the program required design choices to be made. The accounting texts (Horngren et al., 2009; Anthony and Govindarajan 2007; Weston and Brigham, 1974; Vatter, 1971; Shillinglaw, 1961) suggest a myriad of different performance measures



and ratios to assess the health of a business. The twelve chosen for the IPC Model are considered to be the most important in the small business context. They are key measures that are vital for any business to know.

The choice of which performance measures to use has been based on judgement, practical experience in the management of small businesses and common practice as exemplified in the references above. It is possible that the choice may change somewhat when a significant amount of user feedback is acquired

The design consideration was to keep the list as short as possible whilst providing those measures that were considered to be the most effective in both measuring performance and effecting control.

Table 7 below describes the twelve measures selected for the prototype.

No.	Measure	Computation	Information Provided
1	Total Sales per month	Predicted 6 month moving average of total sales (products plus services and other)	Average expected monthly sales six months ahead from the prediction start month.
2	Cash Balance – Upper and Lower Limits	The predicted maximum and minimum level of total cash over six months.	Gives the range of expected movement in cash predicted in the next six months.
3	Gross Margin as percentage of total sales	Predicted 6 month moving average of $\frac{\text{Total Sales} - \text{Cost of Goods Sold}}{\text{Total Sales}}$	This is a critical measure of business profitability. Small changes in percentage can have a large impact on business health.
4	Fixed Costs as percentage of total sales	Predicted 6 month moving average of $\frac{\text{Fixed Expenditure}}{\text{Total Sales}}$	Measures the significance of fixed costs relative to the total sales level. Variable costs are recorded in the Cost of Goods Sold and are part of the previous measure.
5	Employment cost as percentage of sales	Predicted 6 month moving average of $\frac{\text{Variable Employment Cost}}{\text{Total Sales}}$ $\frac{\text{Fixed Employment Cost}}{\text{Total Sales}}$	In most small businesses, employment costs are significant. It is important to measure the relativity between variable and fixed employment costs. Variable employment costs should remain constant or decrease as sales increase. Fixed employment costs should decrease as sales rise, reflecting increased efficiency of operations.

No.	Measure	Computation	Information Provided
6	Profit before tax as percentage of sales	Predicted 6 month moving average of $\frac{\textit{Profit before Tax}}{\textit{Total Sales}}$	Clearly indicates the expected profitability of the business over the next six months but does not predict the cash position.
7	Inventory turnover days	Taking the inventory, sales and gross margin for the month concerned $\frac{\textit{Inventory Level}}{\textit{Sales} * (1 - \textit{Gross Margin})} \times 30$	This indicates the number of days that it would take to sell the monthly inventory level. A 6 monthly moving average of the resulting monthly turnover days is taken to be consistent with the other measures and because cycle times in which change occurs are generally more frequent than in larger businesses.
8	Loans – Debt/Equity Ratio	Using the planned six monthly moving average of both elements in the formula. $\frac{\Sigma \textit{Current Debt Accounts}}{\Sigma \textit{Equity Accounts}}$	This is a measure of current debt needed for working capital. It excludes owner's and mortgage loans as these are more long term in nature. It is important that "equity" is represented realistically in the COA for this measure to be useful. It gives an indication of the risk inherent in the business. A high ration indicates high risk but if successful, high returns are possible.
9	Accounts Receivable - Trend	The planned 6-month moving average of the Accounts Receivable account.	This measure is used to plan the absolute level of Accounts Receivable. It represents sales that have not yet been paid for. Even if sales are increasing it may not be policy for Accounts Receivable to increase as well. The strategy and level of this measure can vary considerably amongst different types of business.
10	Accounts Payable - Trend	The planned 6-month moving average of the Accounts Payable account.	Accounts Payable usually includes amounts owing to others for purchases of inventory, capital and operating expenses. The measure is of the planned average absolute level over a 6-month period.

No.	Measure	Computation	Information Provided
11	Capital – Change in 6 months	Past 6-months: <i>Capital value this month – Capital value 6 months ago (actual data)</i>  Planned 6-months: <i>Capital value 6 months into future – Capital value for the current actual data month</i>	This is a measure of past and planned purchase or sale of capital items over a 6-month period. Such movements can be significant from time to time and impact on the cash and/or loan positions. The value excludes Land and Buildings and Depreciation.
12	Equity – Growth Rate Trend	<i>Total Equity 6 months into future – Total Equity for the current actual data month</i>	The purpose of this measure is to bring about awareness of the importance of equity growth in the business. Equity is a measure of business worth and growth in equity shows the rate of increase in the value of the business.

Table 7 - Twelve Performance Factors - IPC Model

A screen shot of the 12 Key Business Model Parameters is shown in Figure 21 below.

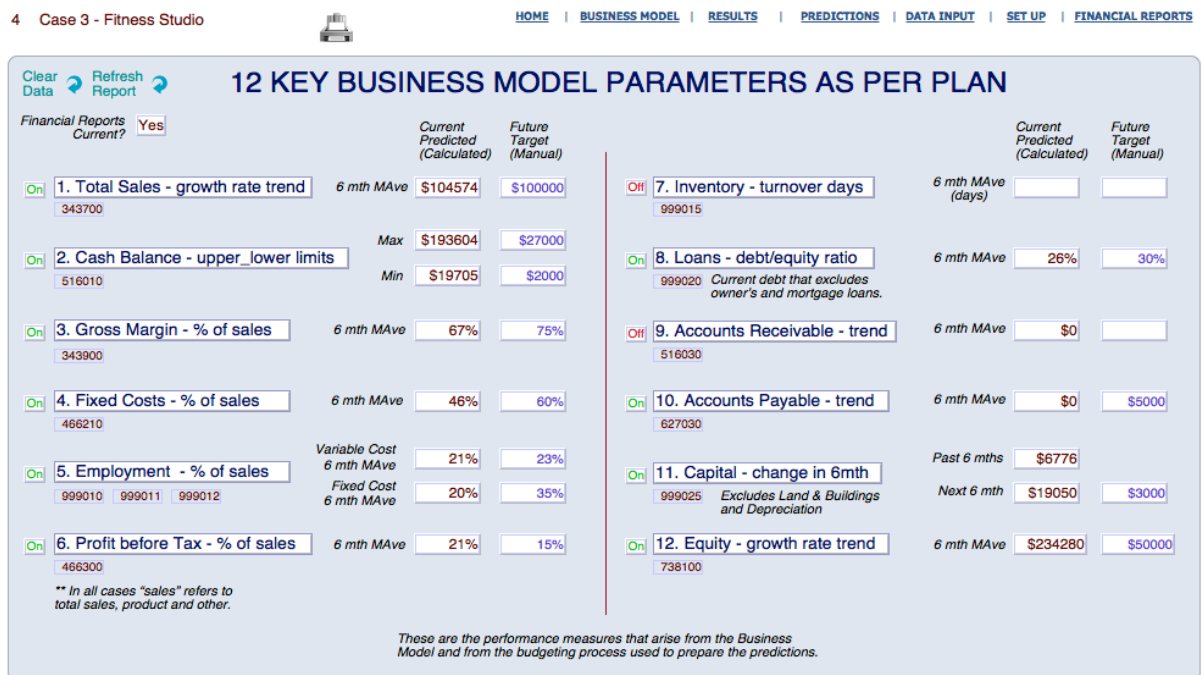


Figure 21 - Business Model Parameters as per Plan

Note that by clicking on any of the labels in the layout, the user sees a trend line graph showing actual performance versus planned in the past and into the future. The design principle here is to encourage the user to “see” the strategic planning process in time line graphs, (both into the future and back from the past) rather than being too focused on a

single month or simply a rough annual amount – possibly divided by 12 to give an average monthly figure. Refer to Figure 22 below.

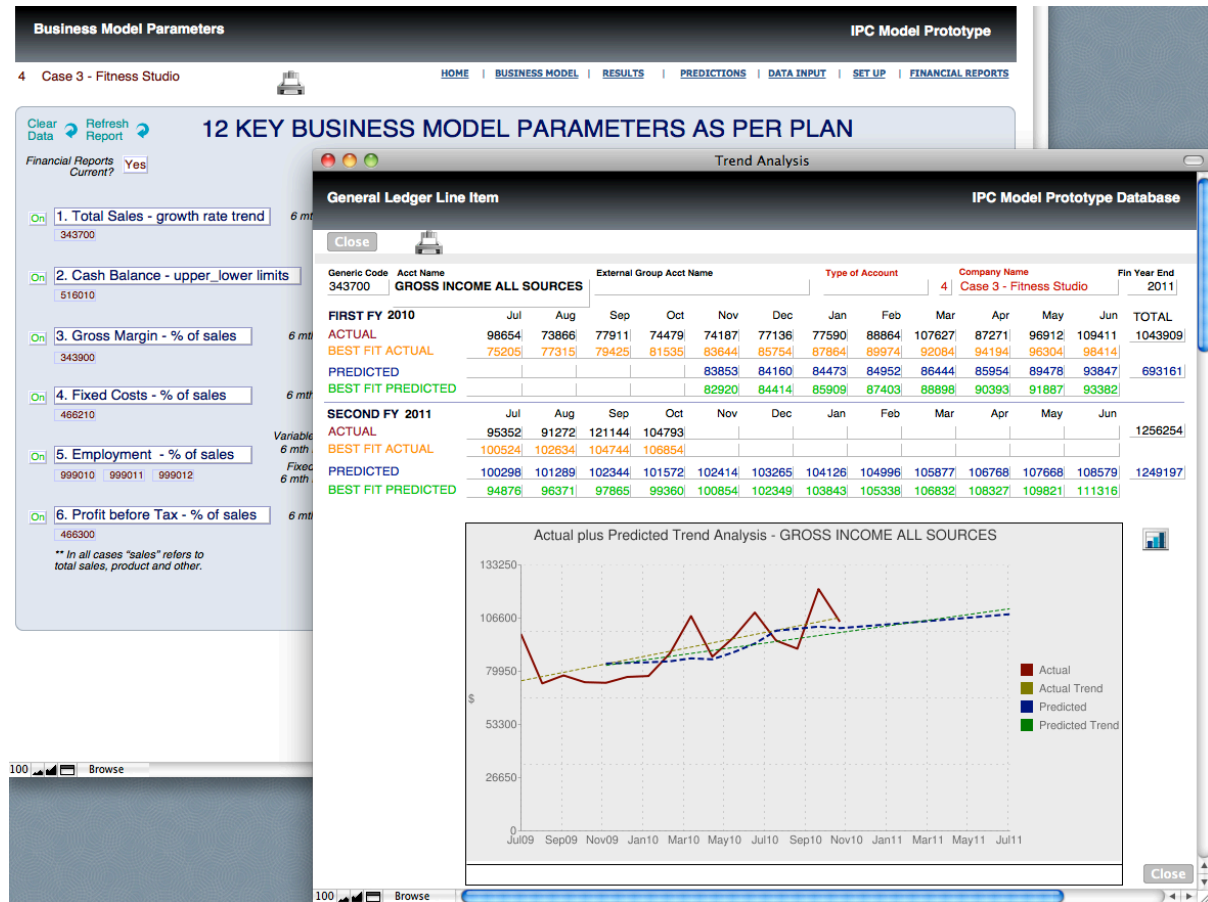


Figure 22 - Business Model Parameters Trend Line Graph

Referring to the screen shot of the ‘12 Key Business Model Parameters’ (Figure 21 above), the right hand column is used to set the target for each parameter. If the particular measure is not relevant, (e.g. a service business does not have inventory) then the measure is toggled to “off” with the left hand button. That measure will not be used in the Results section of the program (used in the monthly cycle phase).

The target is entered manually and represents the level that should be applicable in some future time. A target for 6-12 months ahead would be suggested as fitting in well with the forecasting period of the IPC Model. But the time frame for a target is by choice or from the OM’s perspective, it may just be the desired target to be achieved sometime in the future.

There are two occasions during the MCS process when reference is made to the ‘12 Key Business Model Parameters’.

- **Firstly** in the business model section when the user has completed the business model and first navigates to the ‘12 Key Business Model Parameters’. At this stage the OM is encouraged to enter targets for the relevant performance measures (in the right hand column). The OM may not be able to complete all of the target figures at this stage unless he/she is well familiar with the basic performance measure of the business.
- The **second occasion** is after the planning (third phase of the process) is completed and the Financial Reports are calculated. At this stage, there is original or updated planning data available and the ‘12 Key Business Model Parameters as per Plan’ should be revisited. The report is refreshed making calculations from the newly available data. The measures that are six months into the future can be manually compared with the original target figures entered when the business model was being defined in the start-up phase.

The target figures may need to be changed at this stage. Once the ‘12 Key Business Model Parameters’ are set, these become the *benchmark* for the Results section of the program that is run after the current month’s data is entered and the Financial Reports are updated (the monthly cycle).

The act of setting targets is strategic in nature and most likely involves a seesaw approach between the planning process and target setting of each performance factor.

The experience with the case studies, in general, was that initially the OM was not able to set all of the targets without first having completed the forward projecting process. Some of the targets were relatively easy to set, such as cash balance upper and lower limits, monthly dollar sales target and gross margin as a percentage of sales whereas others were more difficult.

Changing the measures is not a difficult task as the program structure using the Generic COA and the 24 month time period provides design flexibility. An example of a change that might be appropriate is the measurement of Accounts Receivable. This measure can be expressed differently as follows:

$$\text{Accounts Receivable Turnover} = \frac{\text{Average Net Monthly Credit Sales}}{\text{Average Forecasted Accounts Receivable}}$$

Both averages are calculated over the predictions for 6 months ahead. This measure shows how well the company collects on credit sales. The higher the ratio the better the

result. The only problem with this formula, is that it requires an estimate of the percentage of total sales each month that are credit as opposed to cash sales.

The formula above is probably the more usual based on accounting practice but it is sometimes a bit confusing for users who are not particularly mathematically inclined.

This decision is a perfect example of taking a less complicated approach, with the judgement that the simpler method should be just as effective in practice. The important point in making this choice is not so much the measure itself but rather the process discipline on the OM that requires review of these measures each and every month.

Given time the user should become familiar with the measure that characterises his/her own business. The users need to gain control, by first planning based on the characteristics of the business and then meeting those plans with actual results.

## **4.6 Forecasting**

This is the core function of the IPC Model. Forecasting is one part of the total planning process. In most classic texts forecasting takes the form of an annual five-year budget that proves the viability of the business and sets targets for growth and development (Horngren et al., 2009; Anthony and Govindarajan 2007; Davis, 1974; Bierman and Smidt, 1971; Harrison et al, 1970; Hendriksen, 1965). The annual budget is then broken down into a monthly format for up to a maximum of two years. Of course there are many variations to the basic principles but essentially the financial planning phase revolves around the budget.

The IPC Model is designed around a slightly different approach. The first time that a forecast is produced the process is similar to preparing a budget.

Once the forecast is completed and the cash outcome is satisfactory, then the 'forecast' or 'budget' become 'predictions'. The reason for this terminology is that as soon as the first new Trial Balance data is entered a month later, the process changes from one of relating to the fixed budget to that of 'continuous adaption'. (Similar to rolling forecasts as noted by Sivabalan et al, (2009); and Bogiages, (2004) but bringing in the concept of action taking place in response to actual conditions – hence the word 'adaption' – see Section 4.1.3 above.)

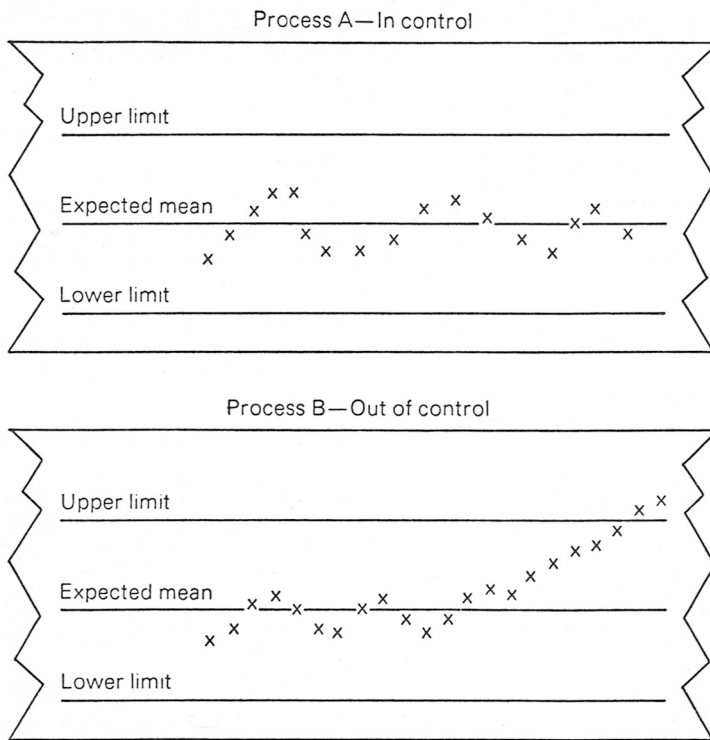
The theory is that the OM needs to continually forward project outcomes based on the latest data. The IPC Model enables the OM to review and change the predictions every month if

required. In fact the Adaption process is encouraged. It is part of the control philosophy built into the program design. Continuous incremental adjustments based on knowing the latest data and seeing its impact is the way that control is achieved. This concept is not at all new. Figure 23 is extracted from Davis (1974, p359) who distinguishes between the “Single-forecast plan” and the “Flexible-activity plan” in the context of IS support for planning activities.

*“Information system support for control begins with the planning model. This same model can generally be used to set revised standards of performance which consider the changed level of activity. These revised standards are necessary for control.”*  
*(Davis, 1974, p. 360)*

The other relevant observation by Davis (1974) is:

*“Another use of information system support in control is continuous monitoring or performance rather than just periodic reporting. The monitoring makes use of the planning model plus the concept of control limits to track performance. When the performance falls outside the control limits, a message is provided to the proper control unit. The control limits are set so that random variations do not trigger control actions. The concept may be visualized by a control chart showing one process in control, even though it has random variations and a second process that has gotten out of control.”* (Davis, 1974, p. 360) (Figure 23 below).



**Figure 13-6** Control charts to illustrate use of control limits and continuous monitoring.

**Figure 23 - Information System Support for Control (extract from Davis, 1974, p. 361)**

Although these principles were proposed a long time ago in the context of information systems being developed to assist in organisational planning and control, they are still highly relevant today.

Figure 24 below is a case example of a performance measure (Profit before Tax as a percentage of Sales) that was not in control at the beginning but is showing signs of improved control as time progressed. Note how early forecasting was poor but is improving over time.



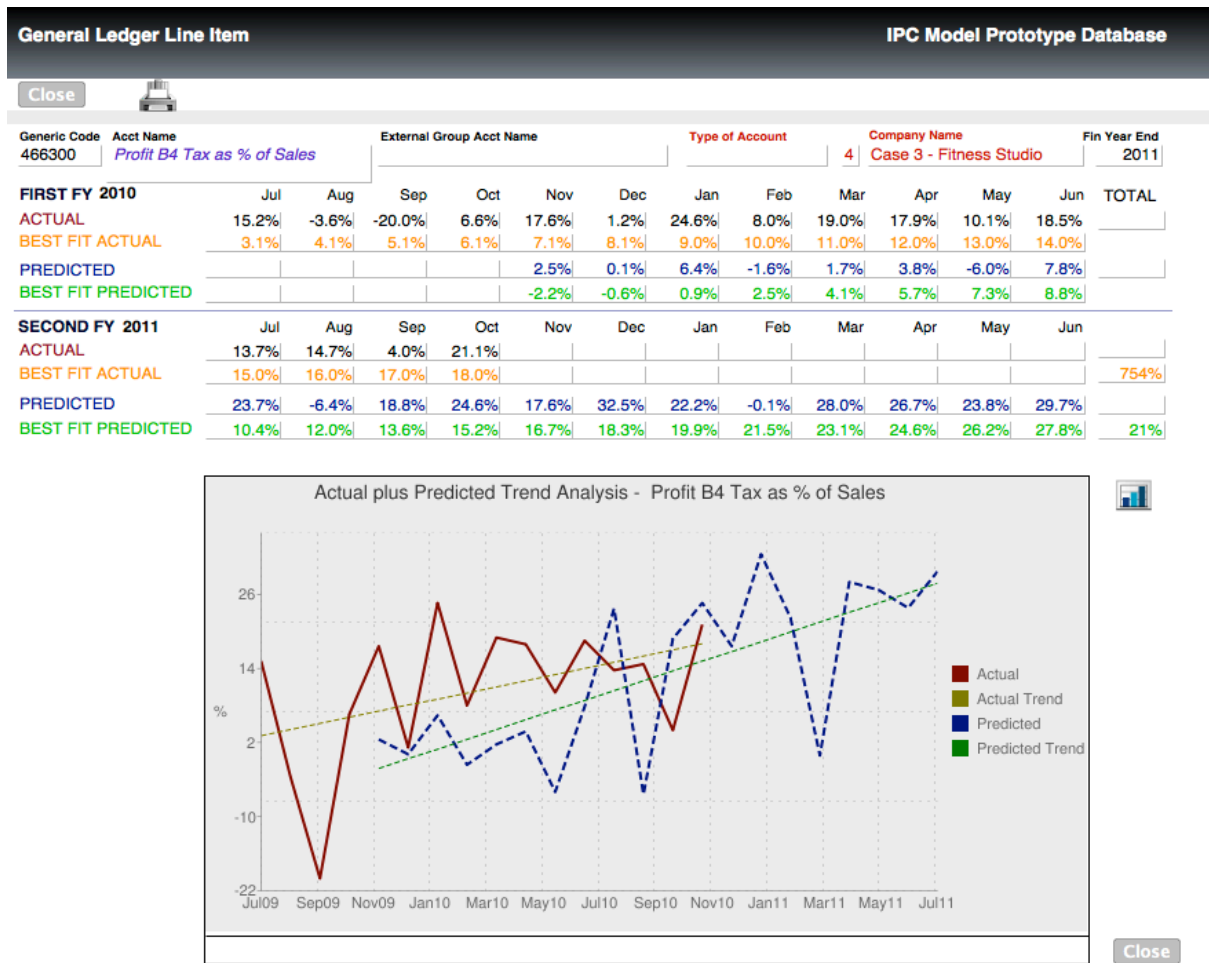


Figure 24 - Improvement in Control and Accuracy of Forecasting

As will be seen from the case study analysis in Chapter 5, small businesses do not necessarily continuously monitor their performance. Traditional budgeting methods are often the “Single-forecast plan” type.

The control limits suggested by Davis (1974) are built into the Results Analysis section of the IPC Model. The flags that indicate ‘OK’, ‘Caution’, ‘Review’ are the control limits (see Section 4.7.3 and Figure 40).

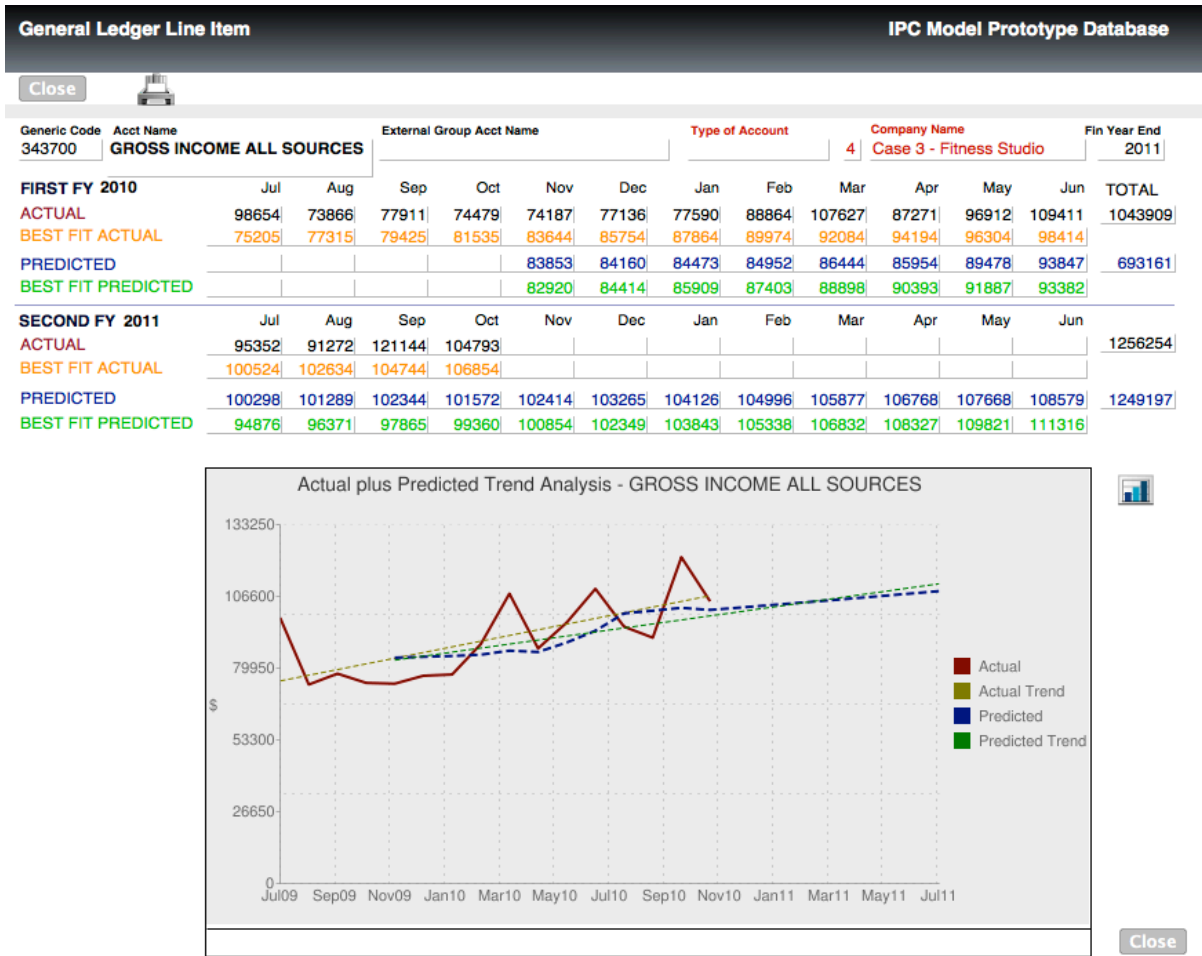


Figure 25 - Sales Forecasting exhibits better control

In contrast, the case concerned in Figure 24 had much better initial understanding of sales levels and has been able to forecast these with increasing precision. Thus there is greater control in this area than in the case above. See Figure 25 above.

### 4.6.1 Planning Process

There is no short cut to preparing a realistic forecast that is helpful in managing business outcomes. It requires contemplative effort and attention to detail. Once the first forward projection is completed to the OM’s satisfaction, there are elements of the forecast that are relatively stable. For example, items of expenditure such as rent, rates and services are mostly well known and stable. The review and control aspects of the process usually are confined to a few key drivers of the particular business and once the OM is regularly monitoring and re-predicting those drivers every month, the effort and time taken should be greatly reduced.

In the design of the IPC Model, the need to provide educational content to assist the OM with the planning process has been considered. It is not expected that anyone would be able to complete the planning process in the IPC Model without some training or introductory material. This is why the OM may prefer to use a consultant initially. However, one cannot assume that consultants will be able to give correct advice unless they have practical management accounting knowledge and training in the use of the program.

In a commercial version of the program, training videos and other tutorial materials would need to be available. It is not so much that the program is difficult to operate but that in the small business context, it is assumed that the OM will need to be motivated to take on the planning process at the level of detail required to produce realistic and useful results.

Another design principle is that predictions or forward projections must be carried out in a line-by-line fashion taking one GL Line Item or account at a time. Buttons at the bottom of the predictions screen allow the GL Line Items to be displayed according to the classic sections of an accounting system: viz. Assets, Liabilities, Equity, Income, Cost of Goods Sold or Expenses. A typical screen layout for the predictions table is shown in Figure 26 below.

Coy ID	Composite Gen Code	Generic Acct Name / External Group Acct Name	Gen Prefix	Generic Code	Prediction Status [Reset]	Y1	Prediction												Total	Methods Explanation			
							Jul09	Aug09	Sep09	Oct09	Nov09	Dec09	Jan10	Feb10	Mar10	Apr10	May10	Jun10					
4	65120	Salaries - Employees <i>Wages &amp; Salaries</i>	6	5120	Done	Y1						31416	32044	32685	33339	34006	34686	35380	36087	269643	Clear	Memo	
					Y2	14622	21933	14622	14622	14622	14622	14622	14622	21933	14622	14622	14622	14622	14622	14622	190086		
4	65140	Work Cover Salaried Employees <i>Worker's Compensation</i>	6	5140	Done	Y1						2900				2900			2500	0	8300	Clear	Memo
					Y2	0	2500		0	0	2500	0	0	2500	0	0	2500	0	2500	0	10000		
4	65150	Employees Superannuation <i>Superannuation Guarantee</i>	6	5150	Done	Y1					4080	4162	4245	4330	4416	4505	4595	5340	35671	Clear	Memo		
					Y2	3838	3839	3840	3841	3843	3845	3847	3849	3851	3854	3856	3859				46162		
4	65200	Accounting Fees <i>Accounting Fees</i>	6	5200	Done	Y1															6000	Clear	Memo
					Y2	0	0	6000		0	0	0	0	0	0	0	0	0	0	0	6000		
4	65220	Advertising & Promos <i>Customer Care Costs</i>	6	5220	Done	Y1					1833	1833	1800	1800	1800	1800	1800	1800	1800	14467	Clear	Memo	
					Y2	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	21600		
4	65230	Annual Return Fees <i>Filing Fees (ASIC)</i>	6	5230	Done	Y1						300									300	Clear	Memo
					Y2	0	0	0	0	0	0	300	0	0	0	0	0	0	0	0	300		
4	65250	Bank Fees & Taxes <i>Bank Charges</i>	6	5250	Done	Y1					1500	1500	450	455	459	464	468	473	5768	Clear	Memo		
					Y2	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	6000		

Figure 26 - Sample of Predictions Layout

To facilitate forecasting, each line can be projected ahead using a selection of “methods”. There are 17 Methods in the prototype version of the IPC Model. The design allows for the number of methods to be increased or the existing methods to be improved over time thus adding to the internal sophistication of the program.

Some of the Methods are “recommended” (e.g. depreciation, GST calculations, capital budgeting and the like) in that when the user selects the method for the calculation, a message comes up suggesting which method is the most appropriate. The message only appears for certain GL Line Items and can be overridden. This design feature is the beginning of an “expert system” approach. It is at this point that the user could, by selection, be directed to an online or within program video explaining the suggested method in detail. This is one way that the learning function of the program could be enhanced.

The forecasting horizon selected as part of the design principles was 24 months (Section 4.1). An explanation of why this period was chosen is discussed in section 4.6.4. The start month is defined in the program setup. It is possible to start the IPC Model without bringing in any actual data and forecast an outcome over 2 years for a brand new company or an existing company setting out on a new course that does not depend on past data. The start point however, is completely flexible, being set simply by specifying the start month and the start calendar year.

Methods can act on either a single GL Line Item, (for example, a constant monthly rent payment) or they can carry out various accounting entries automatically, such as the case of calculating GST provisions or the buying and selling of capital items that involve quite complex calculations and entries. It is via the mechanism of ‘Methods’ that the “intelligence” of the IPC Model can be expanded and developed over time. For example, quite sophisticated mathematics could be applied to simulate expected seasonal variation in a product sales line. Some sophistication is included in the prototype to allow the evaluation of its effectiveness in the case studies.

Whilst a prediction can encompass a whole 24-month period, the most common usage envisaged, is that the user will want to input some past data. Thus the design caters for a graph being generated for every line item.

Each graph shows a 3-month moving-average, a least squares trend line and any prediction previously made. By looking at the graph of past data, the user can more easily forecast according to past trends or according to new targets. After selecting a method and then producing the prediction, reference can be made to the graph for a second time to see if the forecast makes sense. It is much easier for a user when the forecast is presented as a time series graph. Refer to Figure 27 below.

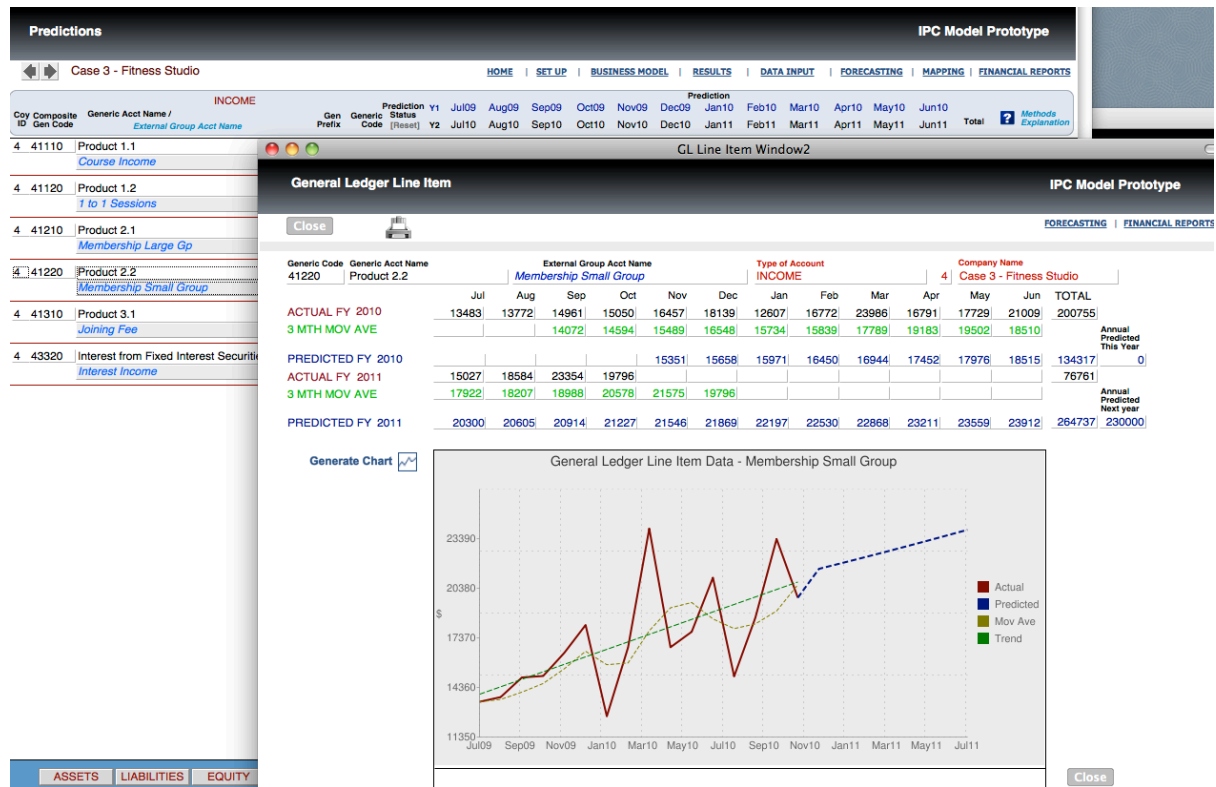


Figure 27 - Predictions Graph with Actual and Predicted Data

The line-by-line forecasting process allows for the start month to be set independently for any line. For example, an OM may only want to change the last three months of the forecasting period. Using data fields at the bottom of the screen, the OM can set the start month as required. In every case, by showing the graph for that particular line the results can be checked for reasonableness.

The purpose behind this design is to encourage the OM to be thinking in terms of up to a 24-month time continuum for each GL Line Item. There are two expected outcomes from this approach. The first is that the overall predictions of company outcomes should, in time, become more reliable. The second is that by dealing with each GL Line Item in fine detail the OM is encouraged to be analytical and systematic in the approach, which to some extent, should eliminate result bias.

This approach follows along the concepts of Forrester (1961) who when devising his theory of system dynamics, talked about complex systems that yield “counter intuitive” results when modelled in detail. Even a small business can be a complex dynamic

system that has many interacting factors influencing the final cash flow outcome. To some extent the IPC Model is like a dynamic systems model.

The program is designed such that the user concentrates on forward predicting all GL Line Items, one at a time, except for the Cash Line, which the program calculates via Method 15.

In any business of reasonable complexity, the end (Cash) result may not be what is expected. At least not until the OM has been using the program for quite some time and actual results are aligning with his predictions on a regular basis. In the first instance of predicting outcomes, the result might well be “counter intuitive” and if this is the case, the IPC Model is providing the learning environment that is part of the design philosophy and purpose of the program design.

Whilst the IPC Model aims to engender rigour into the forecasting process, it is intended at the same time, to make the process easier than one finds in budgeting sections of standard accounting packages or in the spreadsheet budgeting process. Spreadsheets are useful tools for budgeting generally, but in the small business context, the requirement to enter formulae that can inadvertently be changed often detracts the OM from the main function, and that is to think about the business.

There is also the problem that the OM may not necessarily be an expert in the operation of a spreadsheet nor have the interest or time to construct one that is customised for his/her particular business.

Despite the fact that the process of forecasting is not considered to be difficult, users may have to refer to their accountants for the correct representation of items such as depreciation, loan principal and interest repayments, lease contract treatment and other regular transactions that affect both the profit and loss account and the balance sheet.

It is important that the business’ accounting system aligns exactly with the IPC Model in this regard. It is a part of the forecasting function that needs a detailed and careful approach in the first instance but most of the time, such transactions are a regular occurrence and once set in the IPC Model, they then provide a back check on the accounting system to make sure these recurring transactions are completed correctly each month.

Completing the predictions table does not have to be done in one sitting. In the example above, when additional data was needed from the accountant, several days may go by before that data is available. A system of “done” and “to do” buttons is used on each GL Line Item to indicate which line items are completed and which are not. The Cash line in the Assets section of the GL is the last one to be calculated. It predicts the outcome of all the other line item predictions. (Section 4.6.2 following.)

Whilst the predictions process may take some time initially, the Memo at the end of each line item can be used to record assumptions made in the forecasting process – see Figure 28 below.

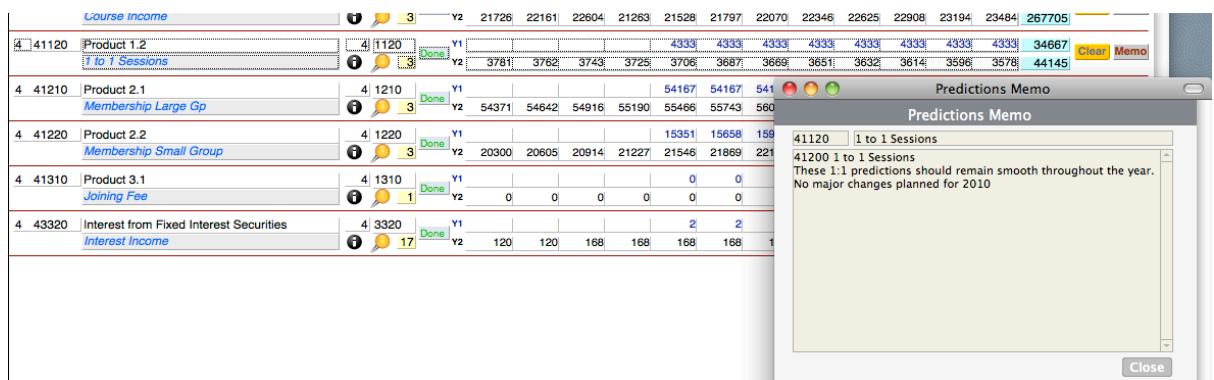


Figure 28 - Predictions Memo being used for Notes

This example shows how a user interpreted the design outside of the original intention. The purpose of the Memo window was to show the user which accounts from the external accounting system were included in the IPC Model GL Line Item. This was information concerning the aggregation process. Early in the first field case study, the OM just started to use the memo field to record notes on planning decisions for later reference much to the surprise of the program author!

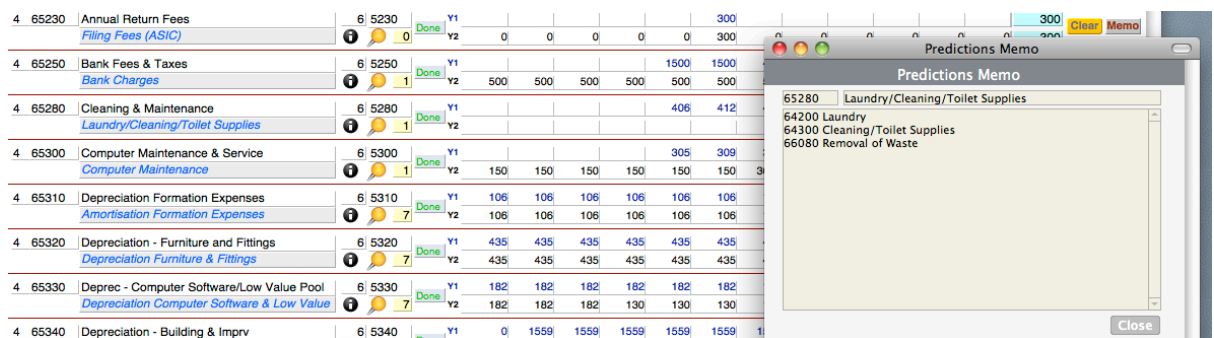


Figure 29 - Memo showing which External Accounts are included in the Line Item

Figure 29 above shows that three detailed cleaning accounts are aggregated in the one planning GL Line Item. The design principle is to try and encourage the OM to aggregate as much as possible, thus reducing the forecasting task and allowing the OM to concentrate on the important drivers of the business.

#### 4.6.2 Cash Flow Calculations

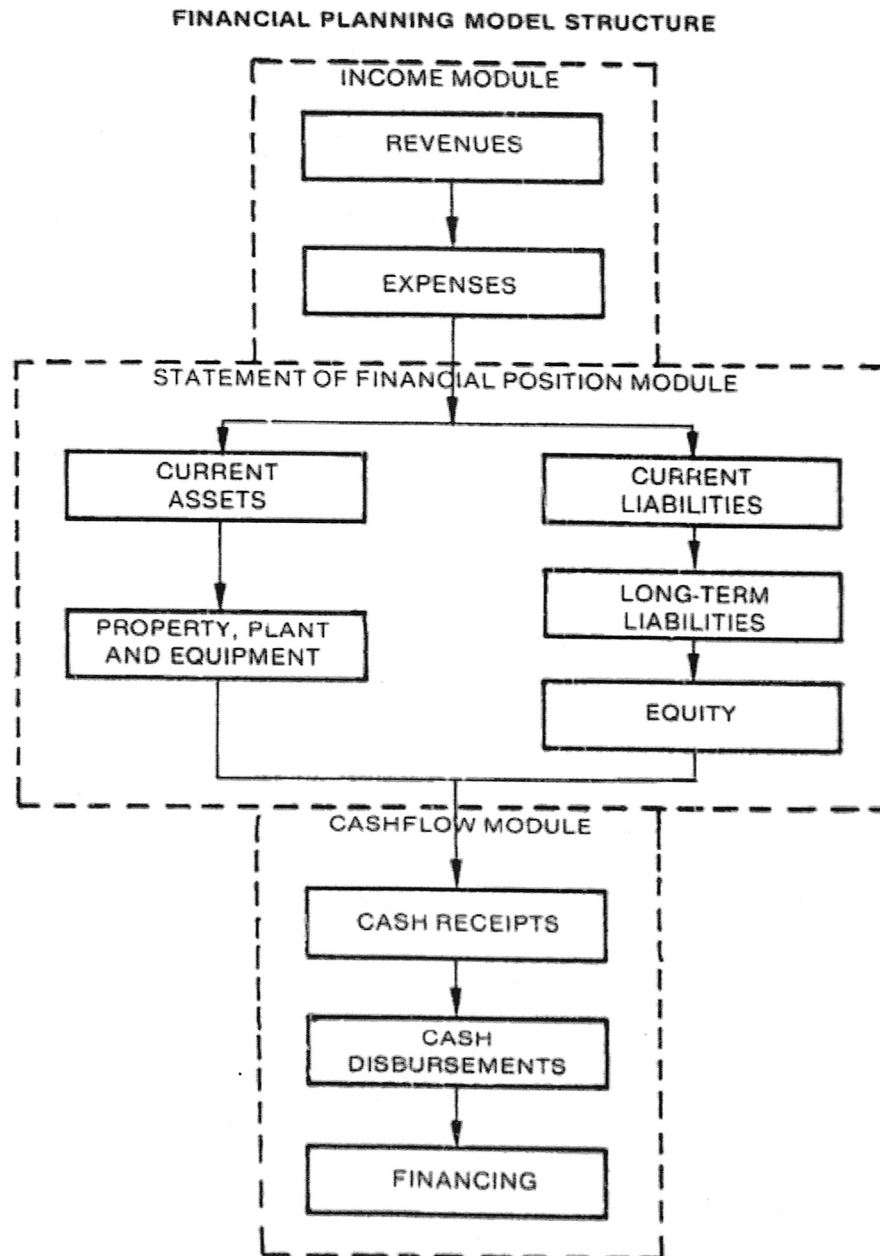
Traditional business planning methods (Horngren et al., 2009; Hayen, 1982) rely on three basic reports that express the budget content. These are the Profit and Loss Statement, the Balance Sheet and the Cash Flow Statement. Generally these are expressed in annual terms but may be broken down into a monthly presentation.

*“Although small businesses are confronted with a multiplicity of problems associated with sales revenues, cost of goods, expenses and profitability, all of which are extremely important, the solvency achieved through cash management is the most critical aspect of small business management.” (Hayen, 1982, p.35).*

Although this statement was made many years ago, it is still absolutely relevant today. Figure 30 below shows the Hayen model for developing the corporate planning model. This model is the same as that implicitly used in the more recent management accounting texts such as that by Horngren et al. (2009).

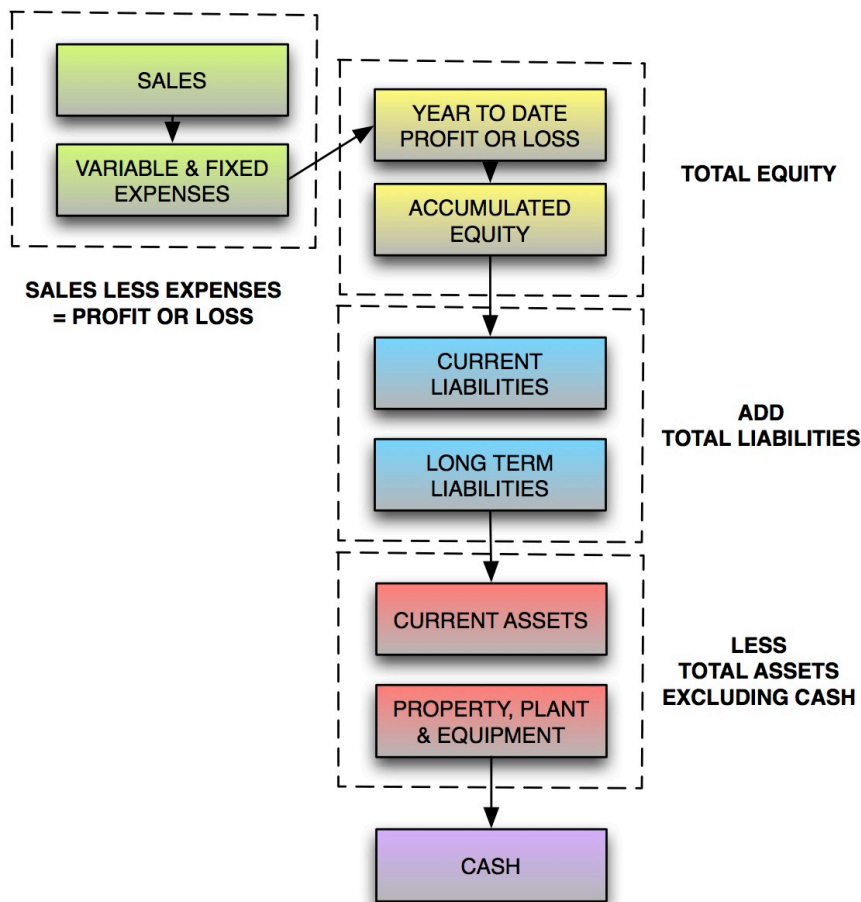
There is an important distinction between the accounting approach to planning and the design of the IPC Model. Both methods recognise the importance of forecasting the cash position within the planning process. The problem with the traditional approach is that the Cash Flow Statement is derived from considerations of rates of collection of receivables and payment of payables, cash outgoings and incomings related to asset acquisition or disposal and similar considerations. With the static or snapshot view of the world that traditional budgets take, the Cash Flow Statement is often difficult (in practice) to reconcile with the standard Balance Sheet and Profit and Loss Reports.





**Figure 30 - Classic Structure of a Financial Planning Model (Hayen, 1982, p38)**

In the IPC Model design, the **Cash Flow is a calculated result** based on the forecasting of all other items in the Profit and Loss accounts and in the Balance Sheet. The considerations of rates at which accounts receivable are cleared and accounts payable paid and the capital fluctuations are modelled in detail as part of the GL Line Item calculations supported with the Methods algorithms. Thus the model for determining the cash outcome is shown in Figure 31 below.



**Figure 31 - IPC Model's Calculation of Cash**

In mathematical terms, the cash becomes the balancing item in the financial plan calculations. There is no need for three separate presentations of results. Only two are required. The Balance Sheet and the Profit and Loss Statements.

What is also important is that the IPC Model approach is time dependent. It predicts the cash flow in a continuum over the forecasting period. Cash is therefore not a fixed figure but can be viewed as a graph showing how the cash outcome varies over time.

The advantage of this design is that the outcome focus of the IPC Model is on the cash result. When planning, several iterations of cash calculation are expected before a satisfactory result is obtained.

The act of investigating the causes of undesirable cash flow outcomes is a learning process for the OM. It is by repeated attempts of changing the plan and then recalculating the cash the OM learns which GL Line Items are critical to cash flow and

which are not. An OM who has a good understanding of accounting would be able to pick the changes required easily. An OM without that background would need the help of a consultant for a few times until he/she understands the drivers of the business in accounting terms.

One of the benefits of the IPC Model method of cash calculation is that the model structure and focus on cash being the balancing item, does not compromise the business's accounting system in any way. It is always totally aligned with the source of actual data (the accounting system), which is an important design principle (Section 4.1.4).

One of the cases (Computer Store – see Section 5.5) serves to illustrate that the IPC Model's cash determination method is not traditional. The OM in this case is a chartered accountant. After completing the predictions for all GL Line Items in the profit and loss account, we discussed at length doing the Balance Sheet. It was interesting to see that the OM's way of conceptualising and forecasting the Balance Sheet was quite different from the IPC Model.

The accounting approach described by the OM was the same as that described by Horngren et al. (2009) and Hayen (1982). The OM was a bit sceptical of the validity of the "calculate the cash at the end", Method 15. The model approach is definitely not the classical accounting method where accountants think in terms of each line item needing an opposite entry even when one is predicting the Balance Sheet line items.

The OM explained that he felt uncomfortable with the idea of doing one-sided forecasting and then calculating the cash at the end. For a mathematician this is the natural way to approach the problem but people who come through an accounting education process simply do not think like mathematicians. When the Balance Sheet GL Line Items were completed in the model and the automatic Method 15 invoked, the OM was surprised that the cash was exactly as he had expected it to be. He said that in parallel with the IPC Model, he is still maintaining his own spreadsheet model. The IPC Model result was basically the same as his alternative forecasting method.

## **4.7 Monthly Cycle**

Having completed the forecasting phase of the IPC Model process, the next step is to get on with the business and ‘wait a month’!

As soon as the accounts are complete for the previous month, the Trial Balance is exported to Excel™ and then imported to the IPC Model. This two-step process is not difficult and does not require the operator to make any changes to the ™ documents.

When a business is well under control, the evaluation of results from the previous month occurs between the 4<sup>th</sup> and 10<sup>th</sup> of the following month. In the cases studied in this research, this was not always the case. Those businesses that were not well under control always seemed to be “Oh we are a bit behind with our accounts!” and that situation could mean a month or two behind.

The design of the IPC Model is such that there should be some incentive to see that the accounts are up-to-date and that performance measurement is timely. However, no amount of design in the IS can overcome the problem of a business simply not being managed properly.

### **4.7.1 Input Trial Balance Data**

The data input screen is shown in Figure 32 below.

Trial Balance Input						IPC Model Prototype					
To Simplified Trial Balance						Case 3 - Fitness Studio					
						HOME	BUSINESS MODEL	PREDICTIONS	RESULTS	SET UP	MAPPING SCHEME
cGeneric Code Full	Ext Acct Number	Current Ext Acct Name	DR Amount	CR Amount	DR Balance	CR Balance	Year Code	Month Code	Company Branch ID	Data Validation Code	
16010	1-1101	Cash on Hand	0.00		100.00		2008	7	4	1	
16010	1-1105	Cash Management Account	0.00		431.10		2008	7	4	1	
16010	1-1110	Cheque Account	622.07		6385.07		2008	7	4	1	
16010	1-1130	Cash Drawer	0.00		600.00		2008	7	4	1	
16120	1-1150	Secure Term Deposit	0.00		25000.00		2008	7	4	1	
16030	1-1200	Trade Debtors	0.00		64.00		2008	7	4	1	
16050	1-1400	Prepaid Insurance	0.00		3022.33		2008	7	4	1	
16050	1-1700	Deposits Paid	0.00		12736.50		2008	7	4	1	
16380	1-2310	Bldgs & Imprv at Cost	0.00		175615.52		2008	7	4	1	
16390	1-2320	Bldgs & Imprv Accum Dep	0.00			5162.00	2008	7	4	1	
16340	1-2710	Furniture & Fixtures at Cost	530.00		43439.13		2008	7	4	1	
16350	1-2720	Furniture & Fixtures Accum Dep	0.00			11514.00	2008	7	4	1	
16360	1-2730	Computer S'ware & WebsiteSetup	0.00		5307.38		2008	7	4	1	
16370	1-2735	Website Accumulated Dep	0.00			3075.67	2008	7	4	1	
16360	1-2740	Low Value Pool	0.00		4961.80		2008	7	4	1	
16320	1-4400	Formation Expenses	0.00		11499.16		2008	7	4	1	
16330	1-4410	F'mation Exp-AccumAmortisation	0.00			5782.56	2008	7	4	1	
27030	2-1200	Trade Creditors		2429.06		6957.24	2008	7	4	1	
27270	2-1310	GST Collected	20145.72		593.33		2008	7	4	1	
27280	2-1330	GST Paid		12280.06		12280.06	2008	7	4	1	
27150	2-1410	Superannuation Accrual		2961.35		64795.32	2008	7	4	1	
27130	2-1420	PAYG Withholding Payable	14955.79			33955.83	2008	7	4	1	
27042	2-1500	Finance Lease - Current		0.00		47316.12	2008	7	4	1	
27043	2-1550	Less Unexpired Charges		0.00	14710.61		2008	7	4	1	
27060	2-1800	Short Term Loans	4000.00			61500.00	2008	7	4	1	
27090	2-2300	Finance Lease - non current	3046.75			131232.65	2008	7	4	1	
27091	2-2400	Less Unexpired Charges	898.29		20469.69		2008	7	4	1	
38010	2-4100	K Challis		0.00		83904.95	2008	7	4	1	
38010	2-4200	A Hollo		0.00		62000.00	2008	7	4	1	
38010	2-4300	D Pullar		5000.00		79500.00	2008	7	4	1	

Figure 32 - Trial Balance Input Screen

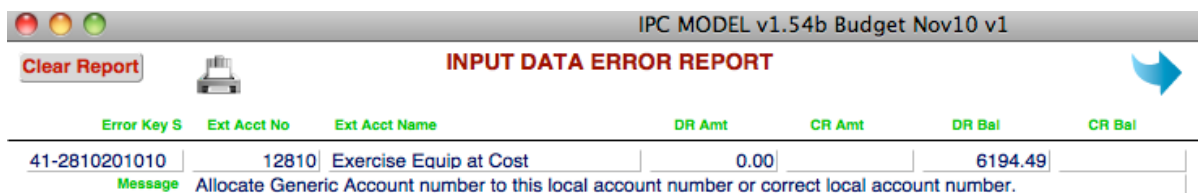
The Trial Balance data is input from the Excel™ spreadsheet via the first button (lower panel) in the screen above. If there is a problem with the data, an error message appears as shown below in Figure 33.

16390	1-2320	Bldgs & Imprv Accum Dep		1559.00		34586.00	2010	10	4	1
16340	1-2710	Furniture & Fixtures at Cost	2387.27		62177.14		2010	10	4	1
16350	1-2720	Furniture & Fixtures Accum Dep		1275.00		38263.00	2010	10	4	1
16360	1-2730	Computer S'ware & WebsiteSetup	0.00		5000.00		2010	10	4	1
16370	1-2735	Website Accumulated Dep					2010	10	4	1
16360	1-2740	Low Value Pool					2010	10	4	1
1-2810		Exercise Equip at Cost					2010	10	4	0
1-4400		Formation Expenses								
1-4410		F'mation Exp-AccumAmortisa								
2-1140		VISA CARD								
2-1200		Trade Creditors								
2-1310		GST Collected	19656.30			10223.20				
2-1330		GST Paid		4536.44	4229.63					

Figure 33 - Most Common Trial Balance Data Error

This error is the most common. There is a tendency for bookkeepers or even OMs to add accounts to their chart of accounts in the accounting system whenever there is a transaction that does not seem to fit into any existing account. Sometimes the additions are valid but in most cases the addition does not take account of the need for planning and that a building up of a proliferation of accounts only makes the planning process more difficult.

This problem is overcome in the IPC Model design.. In most cases the new account can be aggregated with an existing generic account in the model. The principle is to keep the amount of line by line predicting to a minimum.



**Figure 34 - Input Data Error Report**

In the case above (Figure 34) the new equipment really belongs in with the general equipment asset account. The user simply returns to the Mapping Scheme and adds a new account with the generic number for the equipment asset account. With the relational data structure the new generic code automatically appears in the Trial Balance table.

The user returns to the Trial Balance screen and simply processes the data. The data input process is extremely fast. The whole process would take about 5 minutes. Refer to Figure 35 below.

4	2008	7	1	16370	Less: Accum Deprecn Computer & Web	0	-3075.67	42008716370	163704
4	2008	7	1	16380	Leasehold Improvements	0	175615.52	42008716380	163804
4	2008	7	1	16390	Less: Accum Deprecn Leasehold Improvements				163904
4	2008	7	2	27030	Accum Deprecn				270304
4	2008	7	2	27042	Finance				270424
4	2008	7	2	27043	Less Unexpired				270434
4	2008	7	2	27060	Loans				270604
4	2008	7	2	27090	Finance				270904
4	2008	7	2	27091	Less Unexpired				270914
4	2008	7	2	27130	Provision				271304
4	2008	7	2	27150	Provision				271504
4	2008	7	2	27270	GST collected Customers	-20145.72	-593.33	42008727270	272704
4	2008	7	2	27280	Less: GST paid Suppliers	12280.06	12280.06	42008727280	272804
4	2008	7	3	38010	Owner's Equity	5000	473864.95	42008738010	380104
4	2008	7	3	38030	Retained Earnings	0	-554028.93	42008738030	380304
4	2008	7	4	41110	Product 1.1	6903.62	6903.62	42008741110	411104
4	2008	7	4	41120	Product 1.2	5363.64	5363.64	42008741120	411204
4	2008	7	4	41210	Product 2.1	66942.19	66942.19	42008741210	412104
4	2008	7	4	41220	Product 2.2	267.27	267.27	42008741220	412204
4	2008	7	4	41310	Product 3.1	9.09	9.09	42008741310	413104
4	2008	7	5	52210	Contract Labour Costs	995.45	995.45	42008752210	522104
4	2008	7	5	52310	Cost of Product 1.1	5817.91	5817.91	42008752310	523104
4	2008	7	6	65120	Salaries - Employees	33633.71	33633.71	42008765120	651204
4	2008	7	6	65150	Employees Superannuation	2961.35	2961.35	42008765150	651504

**Data Processing**

Your current data import has been simplified. The usual next step is to run your Financial Reports. (See the link top right of the screen.)

[Back to Trial Balance Input](#)

**Figure 35 - Simplification of Trial Balance Data Completed Screen**

One would rightly ask why there is not a direct link to the accounting system instead of needing to obtain data via an Excel™ spreadsheet. The reason is a practical one. Firstly the accounting systems in small businesses vary, being supplied by several vendors each with differing internal data structures. Secondly the accounting system is often maintained by a bookkeeper who uses the system on a daily basis. Traditionally the accounting system is closed off at the end of each month and at that time the bookkeeper can supply the Excel™ data file to the OM. (This is ‘in theory’ but did not occur in any of the cases in this research.)

Another problem with data input is that often the bookkeeper will need to enter data into periods prior to the current period. The concept of “closing off the books” derives from the days when accounting was maintained by entering transactions into large ledger books. At the end of the month the ledger was ruled off and the accounts tallied to produce the Trial Balance. From the Trial Balance, the standard accounting reports were produced.

If there were errors in prior months, these had to be corrected with journal entries in the current month. With the use of computers, however, bookkeepers are able to correct errors in the month that they occurred. This means that the Trial Balance for that month changes and the carried forward figures are different.

This event has happened on several occasions with the case studies. The OM was not aware of the changes until the Financial Reports were produced in the IPC Model. The indication that there is something wrong with prior periods shows up in the IPC Model Balance Sheet when it does not balance. The solution is to re-enter Trial Balance data from the month that first shows the imbalance. The important point to make here is that re-entering several months data including extracting that data from the accounting system takes on the average about 15-20 minutes. Thus the data processing side of the IPC Model is not at all onerous.

### **4.7.2 Financial Reports**

Once the monthly Trial Balance data has been processed the user is directed to the Financial Reports section. There the OM presses the “Refresh Report” button. The arrow keys in the top right hand corner allow the user to move back and forth between two 12 month screens. Each display is designed to show a rolling 12 month view of the current situation together with both Year to Date (YTD) totals and the 12 month total.

The design feature here is that following the ‘continuous adaption’ approach, the forward projections always start from the most current actual data point. Thus the predicted annual result is constantly being updated based on the most current data available. This feature contrasts markedly with the traditional way of budgeting. Figure 36 that follows gives an example of a typical report, showing actual plus predicted results for the Fitness Studio.



Code	Account	Jul10	Aug10	Sep10	Oct10	Nov10	Dec10	Jan11	Feb11	Mar11	Apr11	May11	Jun11	TOTAL	YTD	BUDGET
141210	Membership Large Gp	52299	53761	66635	54519	56203	55017	40472	56302	56584	56867	57151	57437	663246	378906	670691
141220	Membership Small Group	15027	18584	23354	19796	19009	23425	12507	22530	22868	23211	23559	23912	247782	131702	264737
141310	Joining Fee	26	9	18	18	26	1855	49						2002	2002	
141400	<b>TOTAL PRODUCT SALES</b>	<b>95351</b>	<b>91271</b>	<b>121142</b>	<b>104571</b>	<b>91041</b>	<b>119100</b>	<b>106781</b>	<b>104828</b>	<b>105709</b>	<b>106600</b>	<b>107500</b>	<b>108411</b>	<b>1262306</b>	<b>729257</b>	<b>1247277</b>
141410	Sales Growth Rate per Month	(12.8%)	(4.3%)	32.7%	(13.7%)	(12.9%)	30.8%	(10.3%)	(1.8%)	0.8%	0.8%	0.8%	0.8%			
252010	<b>COST OF SALES (VARIABLE COSTS)</b>															
252210	Contract Instructors	9924	8946	10427	8311	8391	4992	4820	16335	10890	10890	10890	10890	115706	55811	131880
252310	Cost of Sales - Breathe Education	7622	1689	15575	3468	3024	18740	25572	15000	10000	10000	10000	10000	130691	75691	130000
252320	Instructor Private	2480	2520	3060	2850	2940	3660	2700	3960	2640	2640	2640	2640	34710	20190	34320
252410	Instructor Large Group	5742	4707	9181	6008	6337	6501	4354	6706	4471	4471	4471	4471	67420	42830	58122
252420	Instructor Small Group	4973	3875	8489	7933	8088	8753	7049	5589	3726	3726	3726	3726	69651	49158	48438
252510	Cost of Sales - Miscellaneous		1500	4443	401		3010		210	210	210	210	210	10404	9354	2520
252650	Merchant Fees	1591	1443	1774	1651	1634	1909	1294	1536	1555	1573	1592	1611	19163	11296	18386
252720	Commission Paid															
252800	<b>TOTAL COST OF SALES</b>	<b>32312</b>	<b>24679</b>	<b>52950</b>	<b>30622</b>	<b>30414</b>	<b>47564</b>	<b>45789</b>	<b>49337</b>	<b>33492</b>	<b>33510</b>	<b>33529</b>	<b>33548</b>	<b>447746</b>	<b>264330</b>	<b>423665</b>
342810	<b>GROSS PROFIT - PRODUCT SALES</b>	<b>63040</b>	<b>66592</b>	<b>68193</b>	<b>73949</b>	<b>60626</b>	<b>71536</b>	<b>60992</b>	<b>55492</b>	<b>72217</b>	<b>73089</b>	<b>73971</b>	<b>74863</b>	<b>814560</b>	<b>464927</b>	<b>823612</b>
342820	Gross Margin as % Sales	66.1%	73.0%	56.3%	70.7%	66.6%	60.1%	57.1%	52.9%	68.3%	68.6%	68.8%	69.1%			
342900	<b>OTHER INCOME</b>															
343320	Interest Income	0	1	2	428	45	20	31	168	168	168	168	168	1367	527	1920
343600	<b>TOTAL OTHER INCOME</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>428</b>	<b>45</b>	<b>20</b>	<b>31</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>168</b>	<b>1367</b>	<b>527</b>	<b>1920</b>
343700	<b>GROSS INCOME ALL SOURCES</b>	<b>95352</b>	<b>91272</b>	<b>121144</b>	<b>104999</b>	<b>91086</b>	<b>119119</b>	<b>106812</b>	<b>104996</b>	<b>105877</b>	<b>106768</b>	<b>107668</b>	<b>108579</b>	<b>1263673</b>	<b>729784</b>	<b>1249197</b>
343800	<b>GROSS PROFIT ALL SOURCES</b>	<b>63040</b>	<b>66592</b>	<b>68194</b>	<b>74377</b>	<b>60672</b>	<b>71555</b>	<b>61023</b>	<b>55660</b>	<b>72385</b>	<b>73257</b>	<b>74139</b>	<b>75031</b>	<b>815927</b>	<b>465454</b>	<b>825532</b>
343900	GROSS PROFIT (All Sources) % SALES	66.1%	73.0%	56.3%	70.8%	66.6%	60.1%	57.1%	53.0%	68.4%	68.6%	68.9%	69.1%			
465000	<b>EXPENDITURE (FIXED COSTS)</b>															
465120	Wages & Salaries	24248	25905	39335	27799	29622	29812	29213	21933	14622	14622	14622	14622	286355	205934	190086
465140	Worker's Compensation				2177	1989		416	2500			2500		9582	4582	10000
465150	Superannuation Guarantee	3221	3218	5177	3644	3801	6383	3489	3849	3851	3854	3856	3859	48202	28932	46162
465200	Acquisition Fees			270	4000									4270	4270	6000

Figure 36 – Profit and Loss Report showing Actual (black) plus Predicted (blue) Results

Note that the report above shows a “budget” figure in the last column. This figure is the rolling 12 month total of the original forecast without the influence of the current data. It is included for those users who like to adhere to the more traditional approach and compare performance with the ‘original’ budget rather than the current predictions. The difference between the predictions and the budget show in the Profit and Loss account not the Balance Sheet.

In Figure 30 below, which shows the sales section of the Profit and Loss report, the first GL Line Item shows the predicted total to be \$283,750 whereas the budgeted total for the 12 month period without the influence from seven months of actual data was \$267,705.

This example clearly explains the difference in design of the IPC Model to that of the more conventional approach. It is argued that the predicted total is now the more realistic and therefore should be used in preference to the original budget. It is also argued that the predicted results will more accurately model the expected cash outcome for the business as a whole.

Financial Reports 2011												IPC Model Prototype				
Case 3 - Fitness Studio												HOME   BUSINESS MODEL   FORECASTING   PREDICTIONS   BM 12 KEY PERF'CE   RESULTS   DATA INPUT   SET UP				
Show all Records   Short Form Report   Profit & Loss   Balance Sheet   Both Rpts												Click column item to reveal details			Refresh Report	
Code	Account	Jul10	Aug10	Sep10	Oct10	Nov10	Dec10	Jan11	Feb11	Mar11	Apr11	May11	Jun11	TOTAL	YTD	BUDGET
<b>**OPERATING STATEMENT**</b>																
<b>141010 PRODUCT SALES INCOME</b>																
141110	Course Income	20559	15254	24694	22178	8844	33884	43779	22346	22625	22908	23194	23484	263750	169193	267705
141120	1 to 1 Sessions	7441	3664	6441	8059	6959	4918	9973	3651	3632	3614	3596	3578	65526	47455	44145
141210	Membership Large Gp	52299	53761	66635	54519	56203	55017	40472	56302	56584	56867	57151	57437	663246	378906	670691
141220	Membership Small Group	15027	18584	23354	19796	19009	23425	12507	22530	22868	23211	23559	23912	247782	131702	264737
141310	Joining Fee	26	9	18	18	26	1855	49						2002	2002	
141400	<b>TOTAL PRODUCT SALES</b>	<b>95351</b>	<b>91271</b>	<b>121142</b>	<b>104571</b>	<b>91041</b>	<b>119100</b>	<b>106781</b>	<b>104828</b>	<b>105709</b>	<b>106600</b>	<b>107500</b>	<b>108411</b>	<b>1262306</b>	<b>729257</b>	<b>1247277</b>
141410	Sales Growth Rate per Month	(12.8%)	(4.3%)	32.7%	(13.7%)	(12.9%)	30.8%	(10.3%)	(1.8%)	0.8%	0.8%	0.8%	0.8%			

Figure 37 - Difference between Budget and Prediction

What is interesting to note is that in all of the case studies where the forecasting process was completed and the actual data input to the model, there was absolutely no interest from users in the budget total. Not one OM was concerned with this particular figure. They all focussed on the currently predicted outcomes and also the YTD figure.

Before the OM goes to the Results section of the IPC Model, which analyses the 12 Performance Factors in the light of the current actual data, it is possible to examine the detail of any GL Line Item. For example, in Figure 38, the GL Line Item ‘Membership Large Group’ was expanded into a graph by clicking on the GL Line Item title.

There is a choice here whether to present the graph showing trend lines or showing variation from budget. The example shows trend lines. The graph shows a sudden and severe reduction in income from this particular source. The OM needs to assess whether that figure is correct or not. When variations are so dramatically different from expectation, the OM’s first reaction should be to examine the accounting system and how the bookkeeper is posting data.

This is a perfect example of the kind of control that the IPC Model provides for the OM. What has probably occurred is that income that should be recorded in the current month has inadvertently been recorded in the first few days of the next month. If this is the case, the accounting problem needs to be corrected and the current data re-input to the IPC Model.

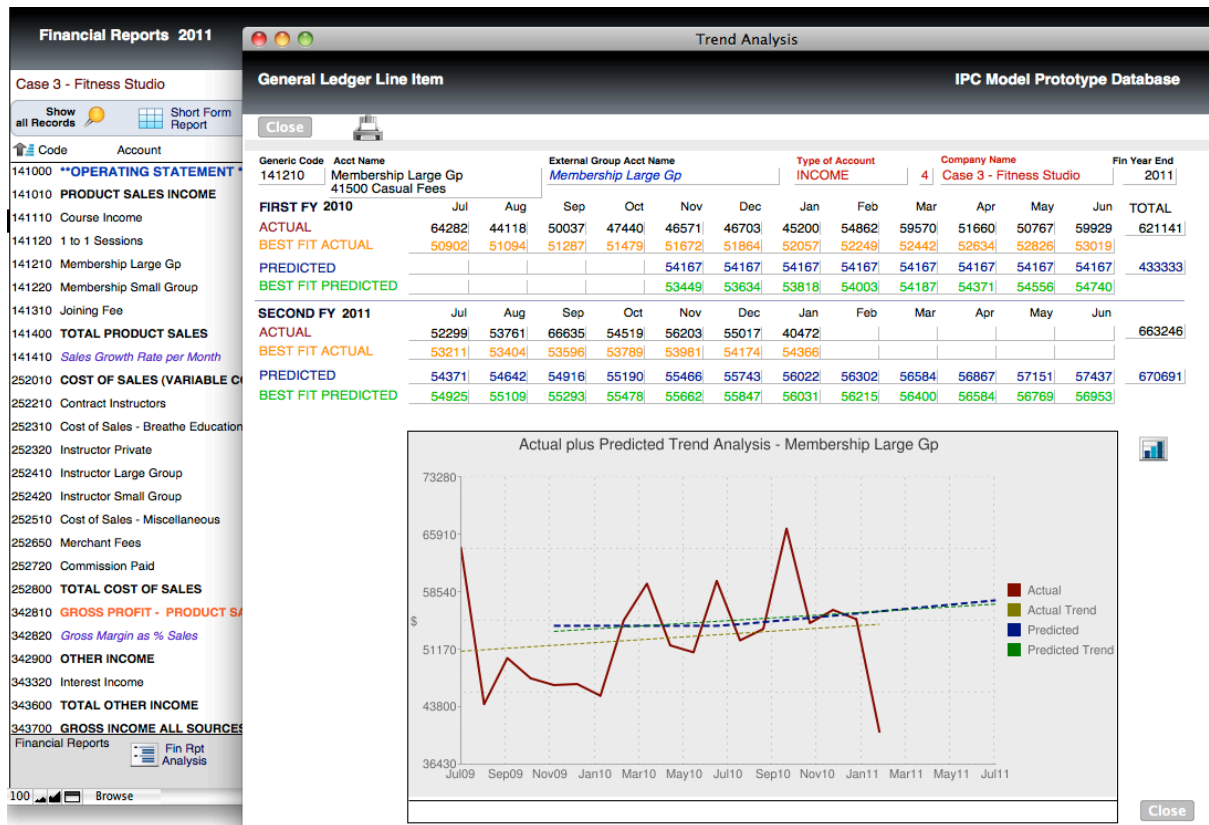


Figure 38 - GL Line Item Analysis via the Financial Reports – Is this a data error?

If the result is not a data error (as in fact is the case), the OM is alerted that there is a problem with this particular income source and can take the necessary action to correct that problem. This is how the control phase of the IPC Model process occurs in practice.

The lower sales in this case were caused by the fact that January is the main holiday month in Australia and many clients of the Fitness Studio suspend their memberships – sometimes for the whole month, returning only in February. Note that there was a dip in sales in the previous year but the dip was not allowed for in the prediction. The sales figure is also lower than for the previous year.

With practice the OM should be able to allow for the January dip in the forecasts. The OM explained that the characteristic cyclical variation in sales also depends on the number of trading days in the month.

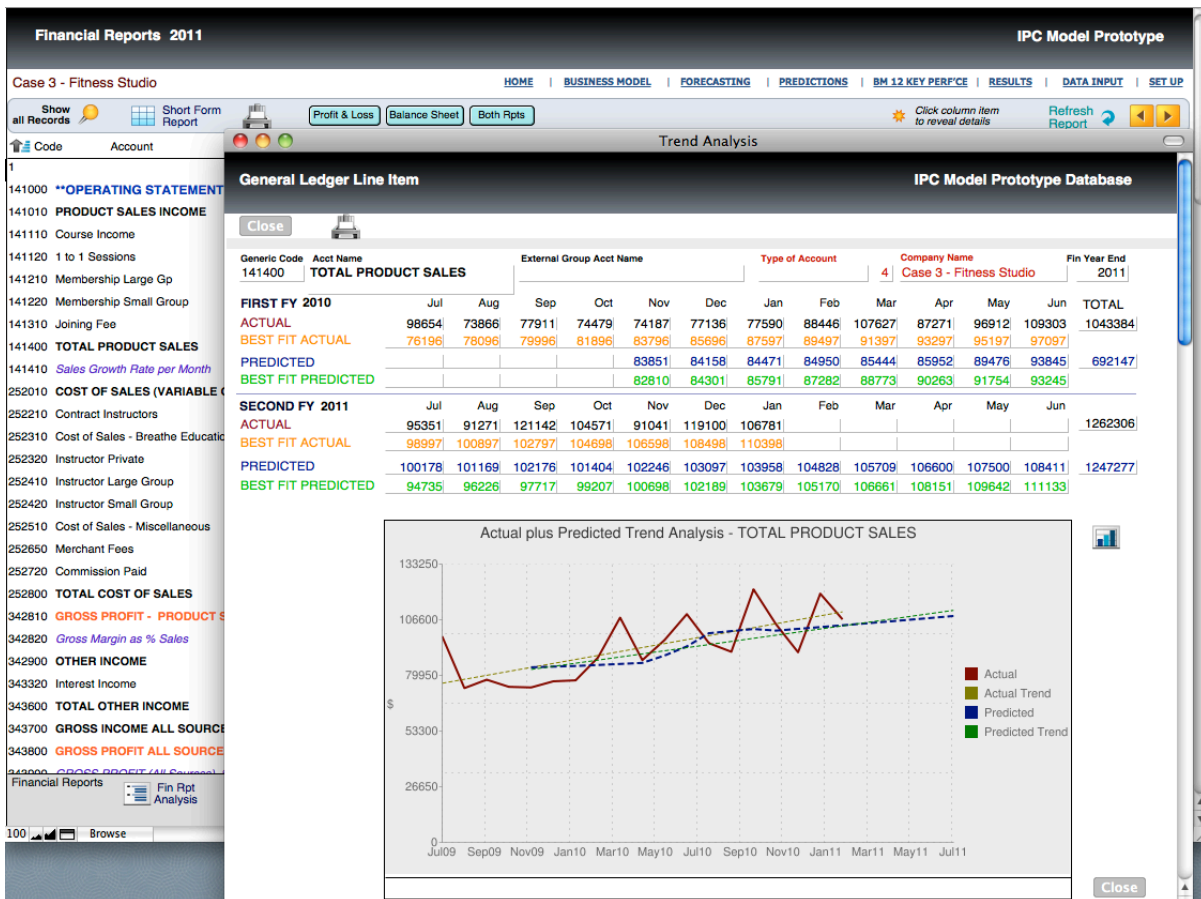


Figure 39 - Gross Sales Actual vs Forecast for Fitness Studio

However, as shown in Figure 39, the total sales for the company have tracked the prediction fairly well. The reason for this is that the company’s strategy to overcome the January dip was to boost its training courses in January. Thus the overall result for the month was satisfactory.

The purpose of showing these examples is to illustrate how necessary it is for the OM to learn to drive the tool effectively and to make use of its inbuilt sophistication. This is not a skill that can be acquired easily. It takes practice and as time progresses the OM’s facility with the tool should improve. Nevertheless, the Fitness Studio example shows that the forecasting that only began in November 2009 was quite effective.

It is necessary to explain a subtle difference between the graphing convention used in the Predictions sections of the model versus that used in the Financial Reports and the Results sections. In the Predictions section when a graph of a particular GL Line Item is displayed, the prediction starts from the last data point. The start point of the prediction is however, variable and is set in the predictions table as required.

If it is set in a past time period, then the prediction line is shown and not the actual results. The idea is that for any one GL Line Item, there is one line drawn that starts with actual data and ends with prediction data with the transition point being in the control of the user.

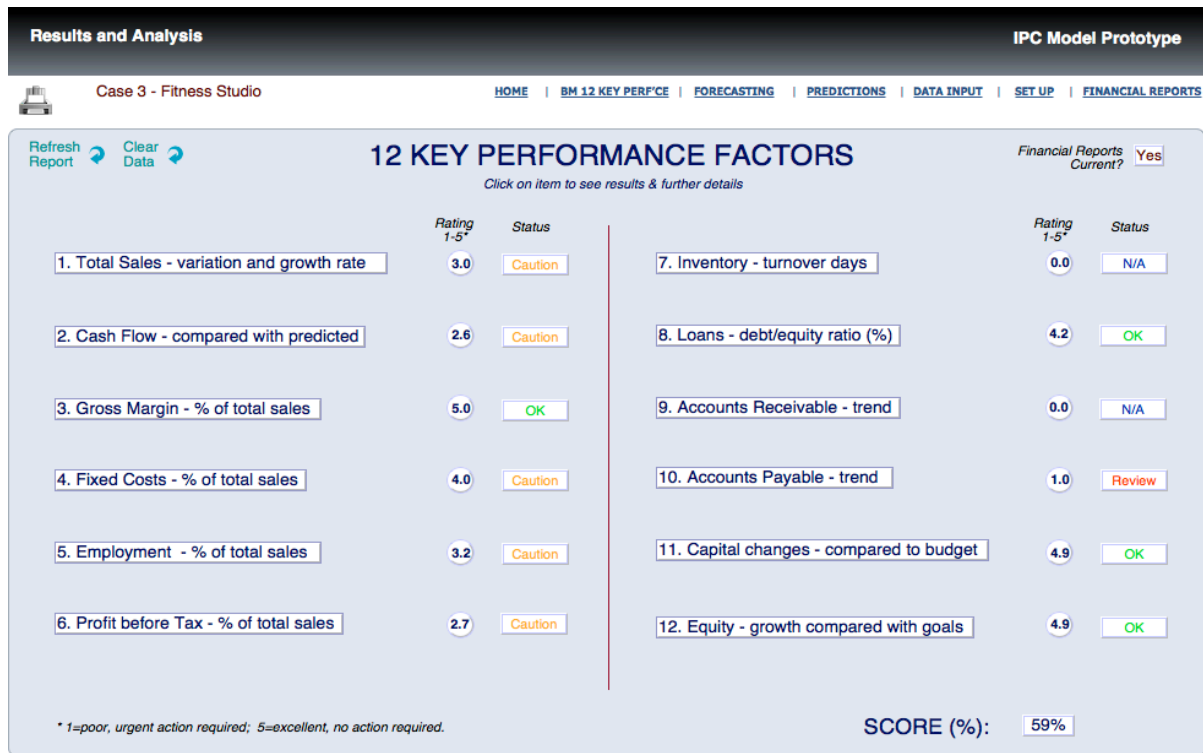
On the other hand, in the case of the Financial Reports and Results sections of the model, all the actual results available in the period concerned are compared with both the past and future predictions. This feature enables the user to be able to see the overall effectiveness of his/her prediction accuracy.

### **4.7.3 Results Analysis – 12 Performance Factors**

The IPC Model design does not expect that the OM who is generally short of time, to dwell on the mass of figures presented in the financial reports. In fact as soon as the reports are generated, a message is displayed suggesting that the next step is to go to the Results Section of the model.

In this section, the user refreshes the report and then the IPC Model provides a scoring of performance measures against the predictions. As can be seen in Figure 40 below, the Fitness Studio example (for December 2010) shows the OM that there are quite a number of performance factors that should be reviewed.

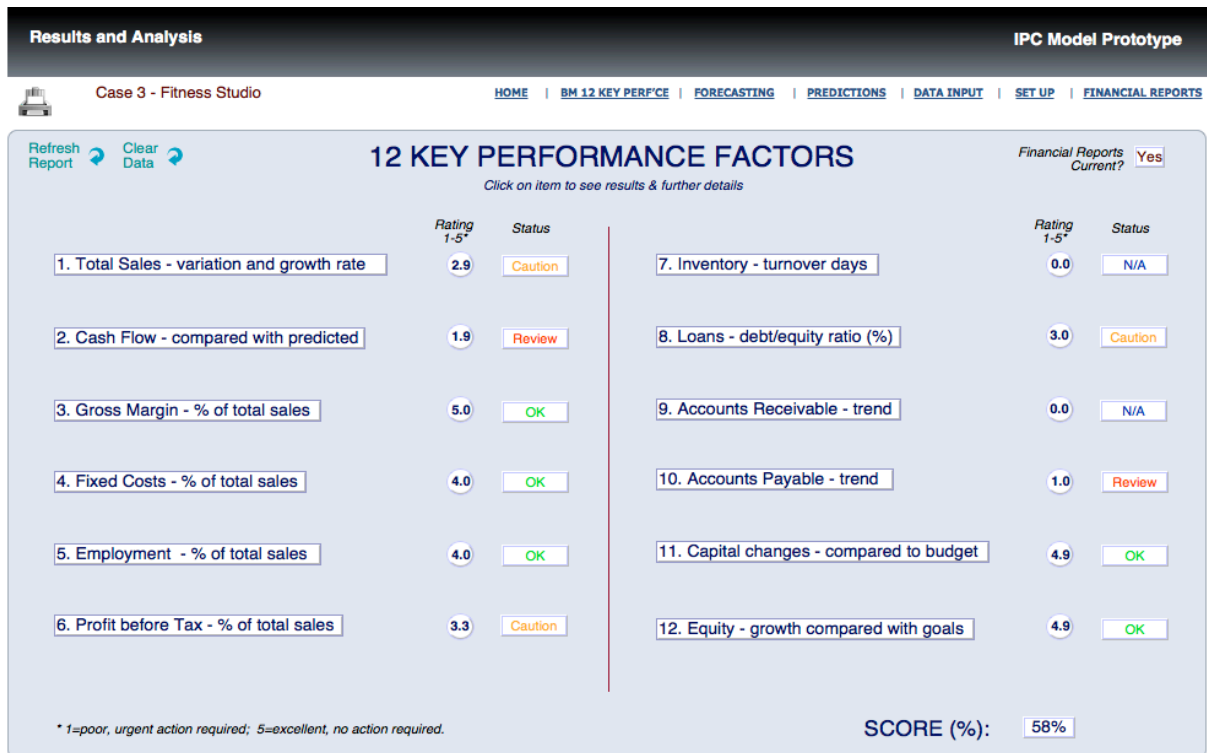
This situation has occurred at the end of several months when the OM did not have time to review the budget and three months past data were entered at the one time. What has happened is that the performance score is about the same but the report indicates that quite a few areas of the business are in the caution area when compared to predictions. This example shows how the IPC Model starts to prompt the OM that action needs to be taken.



**Figure 40 - Results Analysis for the current month (December 2010)**

This result should be compared with the results three months prior (September 2010) as shown in Figure 41 below. It is interesting that the overall score is about the same for the situation three months earlier. This is because the score is an average of the individual ratings from 1-5.

In this particular example the concept of a total score percentage does not appear to be a particularly useful measure. It is possible that the measure needs to be refined in the light of further experience with use of the IPC Model in different businesses.



**Figure 41 - Results Analysis three months earlier (September 2010)**

Note in the example that “Fixed Costs as a percentage of Total Sales” has a better status indication in the earlier September 2010 report compared to that three months later in December 2010.

The OM can diagnose the problem by viewing each of the 12 Performance Factors in graphical format as shown in Figure 42 below. The graph is generated in a separate window when the user clicks on the relevant performance factor label.

The graph clearly shows that Fixed Costs as a percentage of Sales was increasing from September 2010 until December 2010. It appears that the predicted trend line was possibly a little ambitious. However, the OM took action to reduced Fix Costs as a percentage of Sales and by February 2011 the measure was tracking much closer to the prediction.

The point of the illustrations is to show how the IPC Model design encourages the OM to be vigilant about the factors that are affecting the performance of the business. For the OM that is not particularly numerate the visual picture of events should prompt investigation and contemplation.

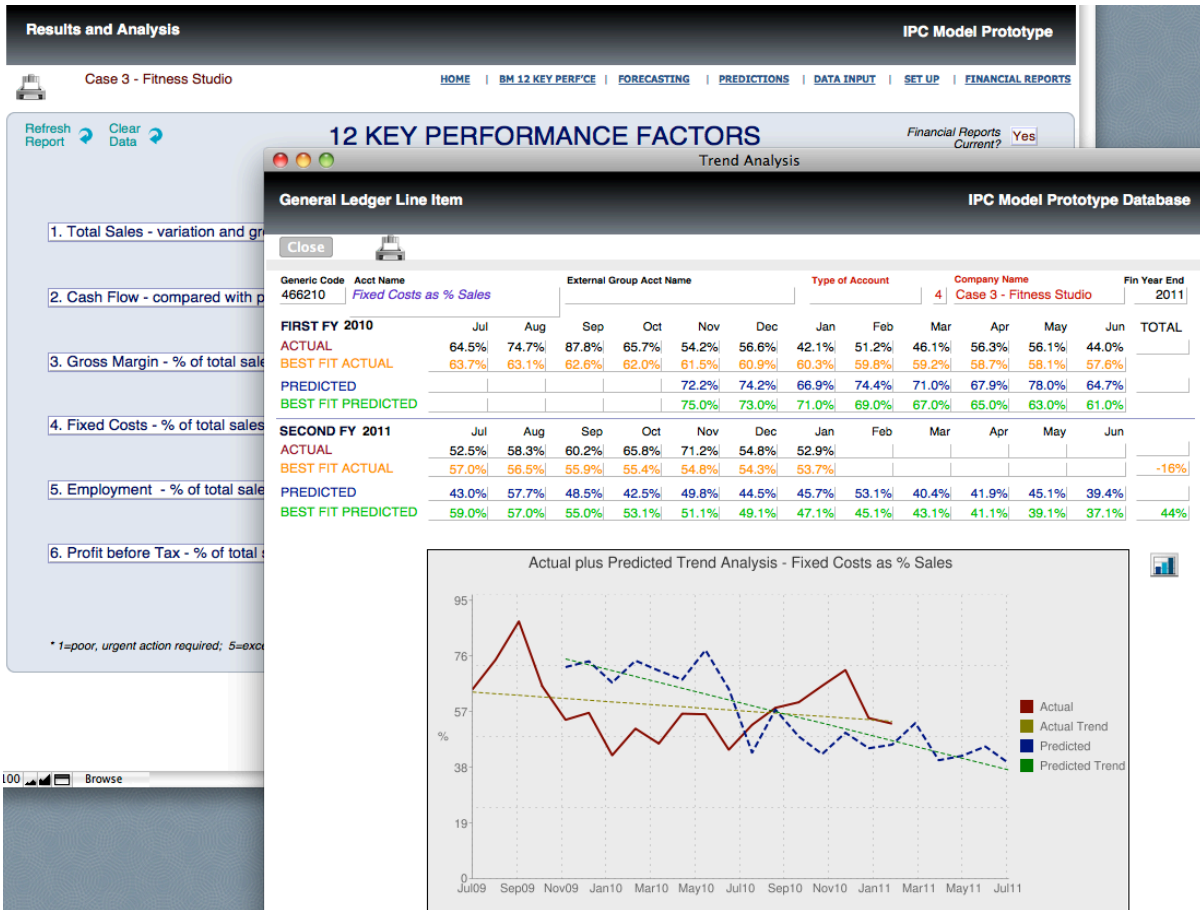


Figure 42 - Further Trend Analysis in the Results Section of the IPC Model

One of the features of other similar software (see Section 4.9) is the ability for users to “drill down” to detailed data in a particular GL Line Item. The IPC Model design is based on a top down/exception reporting approach where problem areas are identified in the Results Section.

The drilling down phase starts with the Predictions section or the Financial Reports section of the model where graphs can be produced of each GL Line Item that comprises the particular performance measure. If this is not sufficiently accurate, the OM can consult the accounting system where the detailed data resides. The accounting system provides the “drill down” facility. It is a deliberate design principle (Section 4.1.4) of the IPC Model to simplify the planning process and deal mainly with the key variables that drive the business. Too much detail in the planning function is confusing for the OM.



#### **4.7.4 Temporal Considerations and Sliding Periods**

In this section the reasoning behind selecting a design horizon of 24 months is explained. In any forecast one needs to refer to some past data and to forecast ahead a reasonable amount of time. As one moves further away from the anchor point of actual data, the predictions become less certain.

In the small business context forecasting 12-18 months ahead is a reasonable time period. That is, 12 months actual data and 12 months predicted or 6 months actual and 18 months predicted. In the IPC Model, the divide between the number of months of actual and predicted is flexible within a particular 24 month period.

When the ratio of actual to predicted data becomes too large the working window of 24 months can be moved along. The system is referred to as “sliding periods” and can be adjusted by the user in the Setup section of the program. It is just as though a viewing window is being placed over the data and that this window can slide along forward or backward as required and at the user’s discretion. As time moves on, the data-viewing window is slid along, one quarter at a time. The program allows for the forward movement in time to be reverted to the previous setting three months earlier but not for a longer period.

The 24-month period assumption is important to the overall program design and permeates all parts of the program. The selection of the period is not based on science nor any mathematical procedure nor theory, but simply the experience of the researcher.

Although it is common to prepare the five-year plan and thus look at how the business model may develop over a long time period, these studies are well catered for by means of Excel™ spreadsheets and are certainly exercises well worth the effort. Such long term planning is more of an exercise in determining what possibilities there are and under what conditions or assumptions that these possibilities could eventuate. Five year planning allows the planner to understand the business drivers and to refine the business model.

The IPC Model has not been designed for long term planning, but as a month-by-month management control tool. This is why the design period for actual and predicted data has been chosen to be 24 months.

Another design principle is that the calculations for the standard Financial Reports within the IPC Model must maintain the 30<sup>th</sup> June convention, that the accounting system “books” are closed off at this date and the calculation of profit/loss recommences each new financial year on 1<sup>st</sup> July. This convention is preserved in the IPC Model despite the positioning of the viewing window.

The design ensures that the IPC Model at all times coincides with the external accounting system and that the end-of-financial-year rollovers are made in the predictions regardless of the positioning of the sliding period. For example, even though the viewing window may be from January to December, the predicted results for July that year will show a closing off at end June and a transfer of profit/loss to retained earnings. Year to date profit/loss for July will be only for that month and will not include the profit/loss for the previous financial year ended 30<sup>th</sup> June.

## **4.8 Forecasting Algorithms**

Forecasting in the IPC Model is facilitated with a series of algorithms that take user input and then provide the necessary calculations to complete the predictions GL Line Items, line-by-line in the Predictions Table. This section briefly explains the 17 Methods and then covers three of the most important Methods in more detail. The reason for the detailed explanation is to show the “expert system” aspects of the IPC Model. The accounting procedures adopted in the model are explained to illustrate the calculations that are made automatically. These calculations relieve the OM from needing to know some detailed accounting transactions.

At the left hand end of each GL Line Item there are three buttons. The left most button activates a graph of the particular GL Line Item showing past actual data with trend line and three-month moving average plus the predictions, if they have previously been made. The right hand button is a drop down menu allowing the user to select a calculation Method for the prediction. The centre button activates the calculation using the chosen Method.

Some GL Line Items have pre-determined Methods that the user is encouraged to adopt but the selection of method is at the user’s discretion and the recommended method can be overridden if desired. Selecting a Method and calculating a prediction can be carried out in any order. A prediction status button toggles between “Done” and “To Do”. Predictions can be changed at any time.

The only rider to these requirements is that whenever the predictions are changed, Method 15, that applies the Cash line item, needs to be re-calculated to determine the latest forward projection of cash flow. If the cash calculation is not as expected, then the forward projections need to be reviewed to determine the cause.

On the occasion when the viewing period is changed, there should be (usually) 3 or 6 months new predictions to calculate. If the earlier predictions are satisfactory, the prediction start month can temporarily be adjusted to allow the calculation of predictions into the extended period.

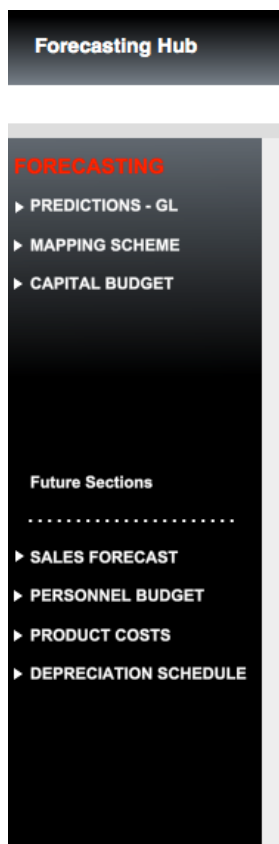
Table 8 below describes each of the methods currently available in the software. The number of methods is not limited in any way. In future versions of the software, the methods can be modified or expanded to increase the “intelligence” and sophistication of the forecasting process.

Methods Used to assist with Forecasting	
<b>0</b> Manual Method	Monthly data is entered into GL Line Item manually. This is used when the amounts are sparsely dispersed over the forecasting period or if it is necessary to amend a particular month for an unusual amount.
<b>1</b> Monthly Amounts	Either enter an annual prediction that will be split into even monthly proportions or state the monthly amount. The monthly figure can be specified for each of two forecasting years.
<b>2</b> Quarterly Amounts	Split annual prediction into quarterly proportions starting from the indicated month.
<b>3</b> Growth Rate	Set a starting amount, monthly growth rate and the number of months to apply. Start from prediction start month and continue to the last month of current predictions.
<b>4</b> Flexible loan TO others	This method theoretically deals with all Loan “To” accounts but is presently tied to two asset accounts Loan1 and Loan2. Interest is accumulated into the one income account Interest Earned from Loans to Others. It is assumed that a monthly payment is set as required and that interest is calculated on the balance outstanding at the end of the previous month. A starting principal amount is entered for the month prior to the prediction start month. The interest rates assumed can be set each quarter.
<b>5</b> Flexible loan FROM others	This method deals with all Loan “from” accounts at once and accumulates the interest payable into the one account. Interest is calculated on the previous month’s outstanding balance. The chosen payment can be made each month or quarter and the principal

Methods Used to assist with Forecasting	
	adjusted as appropriate every month. If no payment is entered, interest is calculated and added to the principal each month. Interest rates are estimated each quarter. A starting principal amount is entered for the month prior to the prediction start month.
<b>6</b> Balance Sheet constant or stepped amount	A constant Balance Sheet amount can be specified for the whole 24 months or it is possible to decide on a step function. e.g. one amount for x months, another amount for y months and so on. Amounts specified add to or subtract from the previous month's amount or the actual starting amount at the beginning of the forecast period.
<b>7</b> Depreciation	This method is tied to a depreciation pair of accounts, the depreciation expense and the negative asset "Less: Depreciation for (Asset Class)". A separate window allows the entry of carried forward accumulated depreciation for the month prior to the forecast start month, and the entry of either monthly, quarterly or variable depreciation over the forecast period. Both accounts are displayed with the forecast depreciation that is calculated.
<b>8</b> Capital Items	Capital items. e.g. Office Equipment. Insert the capital budget for each year.
<b>9</b> Accounts Receivable/Payable	The method used to determine accounts receivable and payable is to use a percentage of the last month's sales/expenses.
<b>10</b> Interest on Investments	Operates on the interest bearing investment accounts in the Generic COA. Currently these are Fixed Term Deposits, Cash Management Trusts and Dividend and Distributions on Shares and Managed Funds - these being the most common for small businesses that are not specialising in investments. The method deals with matching asset/income pairs, calculating monthly interest earned based on up to 8 quarters of interest rate predictions and applied to the previous month's balance.
<b>11</b> GST Calculations re Customers	Calculation of GST collected from customers. Only those accounts that attract GST are selected. The method takes into account the cash flow associated with the BAS each quarter. For example, the December quarter payment is not required until February. In other quarters the payment is required in the month following the end of the quarter.
<b>12</b> GST Calculations re Suppliers	Calculation of GST paid to suppliers. Only those accounts that attract GST are selected. For example, depreciation and interest are not subject to GST. The method takes into account the cash flow associated with the BAS each quarter as in Method 11 above.
<b>13</b> Cost of Goods Sold based on Gross Margin	Calculation of Cost of Sales based on setting a quarterly gross margin percentage.

Methods Used to assist with Forecasting	
14 Inventory of Finished Goods	This calculation is based on the assumption that there must be sufficient inventory available to supply the product sales forecast for the next n months. If the previous month’s inventory level exceeds the minimum requirement, then the inventory remains the same as last month but reduces by the sales*(1-margin) each month until inventory reduces to the planned level.
15 Calculation of Cash Balance after all other predictions made.	Calculation of Cash balance based on all other predictions. This is the last step in the prediction process. It involves running the Financial Reports to calculate the YTD profit and loss and bring that value into the Balance Sheet, then calculate the resulting cash balance.
16 Mixed method - add to and step wise options	Mixed Method. Allows for adding to previous predictions, allows for prediction to be set for a certain number of months and caters for monthly, quarterly or bi-monthly amounts.
17 Percentage of selected Accounts	Calculates Superannuation Guarantee based on wages accounts or calculates a percentage of selected accounts. For example: cost price forecast as a percentage of a particular sales item.

**Table 8 - Methods used for Forecasting in the IPC Model**



The three methods chosen for more detailed explanation are important as they materially affect the cash flow from within the Balance Sheet. As will be shown from the case studies later in the thesis, the OMs studied tended to ignore the Balance Sheet variations and were not focussed on how these variations affect cash flow. The three methods discussed here are:

- Capital Budgeting;
- Accounts Receivable/Payable; and
- Loan Calculations.

**Figure 43 - Capital Budget and other items found in the Forecasting Hub**

### **4.8.1 Capital Budgeting**

As the purchase and sale of capital items strongly affects cash flow outcome and the fact that dealing with capital items from an accounting perspective is not easily understood by non accountants, a design principle was to include a capital budgeting module as part of the IPC Model.

The Capital Budget is accessed from the Forecasting Hub or from a button at the bottom of the Predictions Table.

In a future version of the Model there is no reason why other modules such as personnel planning, detailed sales forecasting and the like could not be added. (Figure 43).

This section explains the function of the Capital Budgeting algorithm and how it has been used in the case studies.

The capital budget takes the form of a table that is not unlike a classic ‘assets register’ that is usually maintained by a company’s accountant to facilitate the determination of depreciation. An example is shown in Figure 44 below.

The user can add or delete items in the table. The design intention is that all capital items that are classified as assets in the accounting system should be listed here.

In the planning process, the user needs to add in all assets that are expected to be sold or to be purchased in the planning period. If an existing asset is to be sold, then the Asset’s original cost plus its expected written down value (WDV) at the time of sale needs to be entered. For each asset, the expected month and year of sale should be entered. Drop down lists facilitate these entries. The table prompts the user with a drop down list, to enter the correct GL Account Number for each asset.

Active/Not Active	CompGen Acc'tNo.	Item Name	Buy/Sell	Qty	Unit Price	cAmount	Month	Calendar Year	Deprec Rate	Asset Orig Cost	WDV of Asset Sold	Equip Period No.	Coy Code
On	16360	Apple Cinema HD LCD 23" Display	Sell	1	\$636.00	\$636.00	Jul	2009	40%	\$1453.64	\$362.54	0	1
On	16360	MacBook Pro Core 2 duo 2.33GHz/2GB/129GB	Sell	1	\$900.00	\$900.00	Sep	2011	40%	\$3780.90	\$400.00	15	1
On	16360	Mac Mini 1.83GHz/2GB/120GB HD	Sell	1	\$594.00	\$594.00	Jul	2009	40%	\$1639.99	\$405.21	0	1
On	16360	View Sonic 21" Monitor	Sell	1	\$185.00	\$185.00	Jul	2009	40%	\$453.64	\$113.41	0	1
On	16360	Mobile MV GPS System	Sell	1	\$250.00	\$250.00	Aug	2009	22%	\$2540.91	\$238.74	0	1
On	16360	Brother MFC5200	Sell	1	\$50.00	\$50.00	Aug	2009	25%	\$635.45	\$27.61	0	1
On	16360	Xen-Alpha Telephone System	Sell	1	\$250.00	\$250.00	Apr	2011	40%	\$5309.29	\$110.15	2	1
On	16360	iiNet Limited Modem	Sell	1	\$0.00	\$0.00	Aug	2009	30%	\$253.64	\$70.00	0	1
Off	16360	MacBook Pro Core 2 Duo 2.66GHz, 4GB Mem	Buy	1	\$3066.00	\$3066.00	Aug	2009	40%			0	1
On	16360	iMac 20 inch 2.66GHz, 4GB Mem, 320 GB HD	Buy	1	\$1873.63	\$1873.63	Jul	2009	40%			0	1
Off	16360	320 GB HD Firewire for iMac	Buy	1	\$350.00	\$350.00	Sep	2009	40%			0	1
Off	16360	Data Projector	Buy	1	\$1250.00	\$1250.00	Mar	2010	40%			0	1
Off	16360	Display Screen (for Data Projector)	Buy	1	\$500.00	\$500.00	Mar	2010	35%			0	1
On	16360	Ergonomic Chair	Buy	1	\$1450.00	\$1450.00	Aug	2009	30%			0	1
On	16360	Sony ICDUX71FS 1 GB Notetaker (voice)	Buy	1	\$135.45	\$135.45	Oct	2009	50%			0	1
On	16360	Mac Book Pro 15inch	Buy	1	\$3500.00	\$3500.00	Aug	2011	40%			14	1
On	16360	Acer Aquire Laptop i7	Buy	1	\$1200.00	\$1200.00	Aug	2010	40%			2	1
On	16360	Journal adjustment for wrong entry	Buy	1	-\$292.55	-\$292.55	Dec	2010	40%			6	1

Summary: Total Buys: \$6959.08, Total Sells: \$2615.00, Net Amount: -\$4344.08

Figure 44 - Capital Budgeting Table

Similarly, all assets that are planned to be purchased need to be entered in the same way but without the original cost or WDV as these do not apply to a purchase. The planning involves setting a month when the purchase is expected to happen.

Finally as this is a planning process, if after consideration the user decides that the particular asset should not be sold or purchased, the line item can be set to “off”.

In the example, note that the Xen-Alpha Telephone system is to be sold in April 2011 and a new MacBook Pro purchased in August 2011. Note also that there are items in the list from previous budgets but they have a zero “equivalent period” number. Each item belongs to the one Generic account number, which is Office Equipment.

Thus the Capital Budget table as described, forms the data source for the prediction of each capital line item in the GL. In the IPC Model, there are five asset classes that are relevant to the Capital Budgeting algorithm and these are defined in the Generic COA.

The reason why the capital budgeting algorithm was included in the model is because it is difficult to predict asset sales and purchases with tools such as a growth rate or monthly amount. Capital item changes tend to be ‘lumpy’ and as they have to be noted in the asset register each item is easily identified individually. The other aspect is that there can be quite a number of these items, all with different buy/sell amounts, at different times in the planning period and in the case of selling, the accounting

transaction required adjustment of the depreciation account and the recording of profit and loss.

When the OM comes to forecast one of the five asset GL Line Items, a message appears asking if the automatic calculation is required. If not, the line item can be forecast in the normal manner, but if the automatic option is selected, the algorithm refers to the Capital Budget and completes the forecast for all relevant buys and sells and carries out the accounting entries accordingly. There is no other input from the user at this stage.

Refer to Figure 45 below. The Capital Budget is calculated using Method 8 when the yellow ‘lollypop’ button is pressed.

1	16360	Office Equipment	1	6360	Done	Y1	19177	20377	20377
		<i>Office Equipment</i>			8	Y2	20085	23585	19804
1	16370	Less: Accum Deprecn OE	1	6370	Done	Y1	-13424	-13589	-13754
		<i>Less: Accum Depcn Office Equip</i>			7	Y2	-15648	-15808	-12704

Figure 45 - Relevant Capital Items in the Predictions Table

After calculation, the program displays the relevant GL Line Item accounts for the OM to consider. At that point, the OM can display a graph of any one of the line items – the assets, the depreciation figures and the profit and loss on sale of asset. If the forecast is not as desired, the OM returns to the Capital Budget table and can turn specific assets on and off as required, and then re-forecast. Figure 46 below shows the results.

Predictions												IPC Model Prototype											
Bardak Ventures Pty Ltd												HOME   SET UP   BUSINESS MODEL   RESULTS   DATA INPUT   FORECASTING   MAPPING   FINANCIAL REPORTS											
Coy Composite ID	Gen Code	Generic Acct Name / External Group Acct Name	Gen Prefix	Generic Code	Prediction Status (Reset)	Y1	Prediction												Total	Methods Explanation			
							Jul11	Aug11	Sep11	Oct11	Nov11	Dec11	Jan12	Feb12	Mar12	Apr12	May12	Jun12					
1	16360	Office Equipment	1	6360	Done	Y1	19177	20377	20377	20377	20085	20085	20085	20085	14776	14776	14776						
		<i>Office Equipment</i>			8	Y2	14776	18276	14495	14495	14495	14495	14495	14495	14495	14495	14495						
1	16370	Less: Accum Deprecn OE	1	6370	Done	Y1	-13424	-13589	-13754	-13919	-14084	-14528	-14688	-14848	-15008	-9969	-10129	-10289					
		<i>Less: Accum Depcn Office Equip</i>			7	Y2	-10449	-10609	-7505	-7782	-8059	-8336	-8613	-8890	-9167	-9444	-9721	-9998					
1	43515	Sale of Plant & Equipment, Office Equip	4	3515	Done	Y1	0	0	0	0	0	0	0	0	140	0	0	140					
		<i>Profit/Loss Sale of Assets</i>			8	Y2	0	0	500	0	0	0	0	0	0	0	0	500					
1	65330	Depreciation - Office & Other Equipment	6	5330	Done	Y1	165	165	165	165	165	444	160	160	160	160	160	2229					
		<i>Depreciation</i>			7	Y2	160	160	277	277	277	277	277	277	277	277	277	3090					

Figure 46 - Results of Capital Budget Calculation

Note in the first year of the Office Equipment line, the drop in the value of the assets in April 2011 when the Telephone System was sold and the \$140 profit that ensued as indicated in the line “Sale of Plant & Equipment ..”. Also note the increase in assets



(Office Equipment line) when the Computer was purchased in August that year. Another item was sold in September for a profit.

This capital budget is a simple example but the benefits of the method are that in a more complex situation the Capital Budgeting can be quite accurate. With this program design the same Capital Budget table can be used as the depreciation schedule for the company. The depreciation schedule then provides the figures for the desired projection of the depreciation expense allocation for planning purposes. By paying attention to depreciation, the OM can more accurately determine its effect on the forecasted taxation liability.

Whilst one would think that this process is quite straight forward, it brings to the IPC Model a level of sophistication that has not been taken up by any of the case study users.

They all preferred to just “roughly guess” the capital item projections for their business using the normal forecasting ‘Methods’. However, this is not a definitive evaluation of the effectiveness of this particular algorithm. In all cases there were no significant asset purchases planned and the Capital Budgeting facility was not really needed.

In a larger company or one that is expanding (e.g. opening a new store) then the Capital Budget becomes important and the facility would most likely be used.

It was also interesting to note that in all cases, the OM’s did not account for depreciation on a monthly basis in the accounting system. Their attitude was that depreciation was a matter for the accountants who work out the expense deduction at the end of the year. This sort of attitude is brought about by a misconception as to the value of regular and accurate accounting and a detailed, rigorous approach to the planning function.

One of the difficulties with this aspect of Balance Sheet planning is that in order to be able to forecast the cash flow accurately, it is important to pay attention to the detail. It is envisaged that if the OM does not have time to complete the Capital Budget table that this could be done by someone else, who would do the necessary research to ensure the past and future assets table was accurate.

This research may involve liaison with the accountant for assets that are to be sold (to obtain cost and WDV amounts) and investigations into the estimated cost of assets that are to be purchased. There is really no reason why the assets register and depreciation

schedule should not be maintained by the company bookkeeper with some defined procedure.

### 4.8.2 Accounts Receivable/Payable

Estimating the level of accounts receivable/payable in a plan is important as it normally has a significant impact on cash flow. Business people tend to say, “all you need to do is to collect early and pay slowly. That will fix your cash flow problem!”.

In the IPC Model, there are several ways to approach the planning for these two items. A simple method is to choose a percentage of total sales or total expenses using Method 17. Another way is for the OM to simply put in a constant monthly amount that reflects the general level of these accounts from past experience. These two methods can suit many businesses.

Also, there are some small businesses that operate on a cash basis most of the time. For example, in the Dog Day Care Centre, customers pay in advance for their dog minding. Similarly in the Fitness Studio, the patrons bought multi-passes for a set number of classes for which they pay in advance. These businesses experience excellent cash flow as a result of their collections policy and their accounts receivable account is close to zero most of the time. However, this may not be the case for their accounts payable accounts. When a large proportion of expenses are paid in cash or within the month (credit card) as in the two cases above one of the simple methods is appropriate.

In a business where Accounts Receivable and or Accounts Payable are prominent amounts in the Balance Sheet, an alternative and more accurate method, Method 9 is available. An example is shown in Figure 47 below.

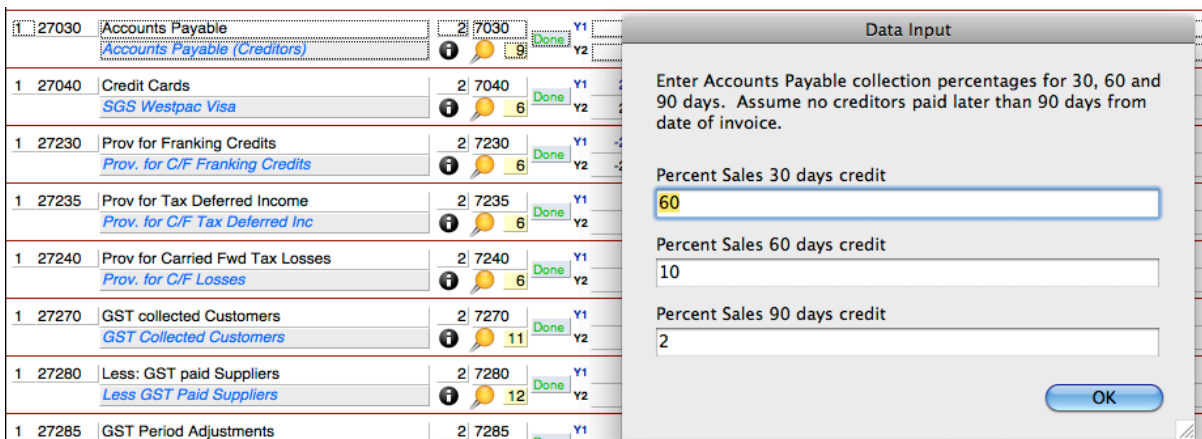


Figure 47 - Accounts Payable Algorithm

This method allows the user to enter an estimate of 30/60/90 day percentages of Accounts Receivable/Payable. These figures are derived from examining standard reports available in the accounting system. They are important factors in maintaining control in a business. For example, if the percentage of Accounts Receivable that is outstanding 60 days is increasing, then the business owner needs to spend more time on collections. A new target to be achieved within three months may be set. The IPC Model will then reflect the improvement.

As an example, the formula for calculating the Accounts Payable figure would be as follows:

Let total payables be 30% after 30 days, 15% after 60 days and 10% after 90 days. Then in month  $j$ , if  $e_j$  is the total predicted expenses for the month (calculated by the algorithm) and  $E$  are the actual expenses in previous months, then the Accounts Payable (Balance Sheet) ( $A_p$ ) will be:

$$A_p = 0.3e_j + 0.15E_{j-1} + 0.1E_{j-2}$$

Of course a formula like this has problems with end effect when beginning the planning process but in the third month from commencing with the IPC Model, the end effect disappears.

Note that “total expenses” in this discussion includes both stock purchases and operating expenses and excludes items that are always paid in cash within the month, such as payroll.

The topic of how a forecasting program deals with time dependencies in relation to income and expense items is important and usually engenders a good deal of discussion amongst accountants and business owners. This was evident in one of the cases where timing issues needed to be managed carefully and the OM was extremely interested to see how the IPC Model performed in this regard.

### **4.8.3 Loan Calculations**

The IPC Model includes an algorithm that is intended to assist the OM with forecasting loan transactions that exist in the business. Methods 4 and 5 deal respectively, with Loans to Others and Loans from Others. Again, this is a feature that assists with the accounting entries associated with loans. It also allows the user to enter variable items

such as the forecast of changing interest rates that will affect either the repayment schedule or the rate at which the principal of the loan changes.

The example shown in Figure 48 below shows a sub-window that allows the user to specify a loan repayment schedule and forecast interest rates. Note the buttons on the right hand side providing methods for entry of the loan repayment details. In this example the forecast is for 24 months.

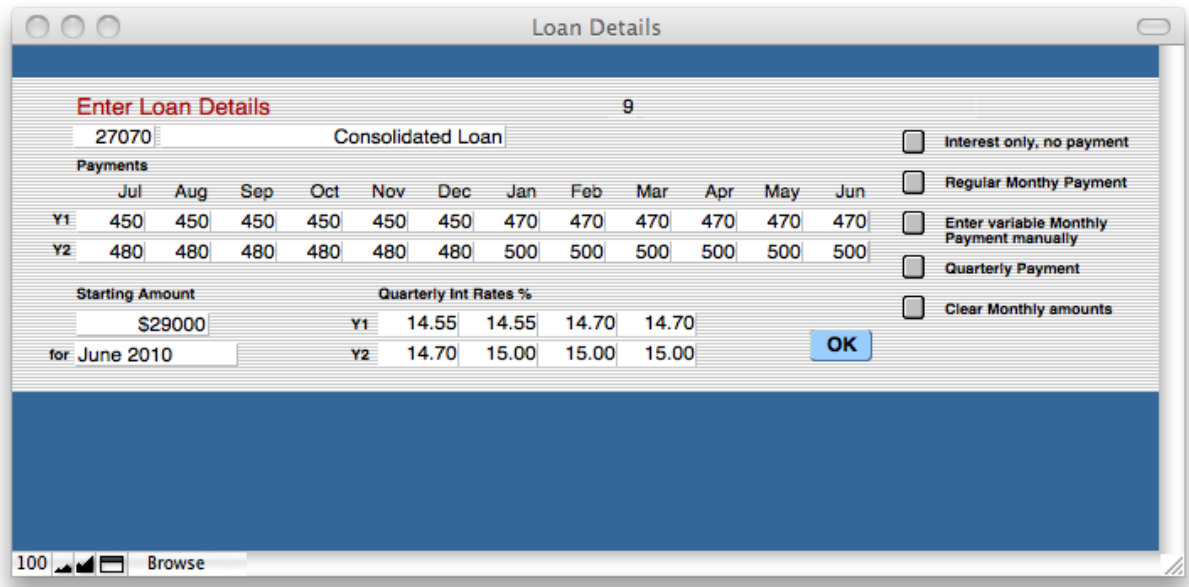


Figure 48 - Loan Calculations

## 4.9 Design Comparison with other Software

Table 9 below summarises the similarities and differences between the IPC Model design and relevant other software packages described in Chapter 2, Section 2.6. There are three software packages chosen for the comparison as they deal with budgeting, planning and control. These are Budget Maestro®, Prophix® and Whitebirch®. The other software described in Section 2.6 does not perform the same or similar function to the IPC Model and is therefore not compared in the table that follows.

Comparison – IPC Model Design with other Software			
IPC Model Design Principle	Budget Maestro®	Prophix®	Whitebirch®
<b>Personal “thinking tool”</b>	N	N	Y (Single user version)
<b>Inbuilt management control process for OM to focus on the future</b>	N	N	N
<b>Simplicity and ease of use</b>	N	N	N
<b>Import Trial Balance (actuals) each month</b>	More detail	More detail	Y
<b>IPC Model uses Generic COA</b>	N	Y	Y
<b>Accounting COA simplified via mapping to Generic COA</b>	N – uses customer COA	Y - does not encourage simplification	Y - does not encourage simplification
<b>Top down/exception reporting approach</b>	N	N	N
<b>Business Model definition</b>	N	N	N
<b>Target setting - 12 Key Performance Factors</b>	N	User defined	User defined dashboards
<b>Program assisted forecasting using “Methods” for all GL Line Items</b>	Y – similar principle	Y – similar principle	Y – similar principle
<b>Graphical time series for every GL Line Items – trend, variations, moving average</b>	N	N	N
<b>Uses ‘Rolling Forecasts’</b>	Y	Y	Y
<b>24 month planning horizon</b>	N	N	Seems to be 12mth based
<b>‘Sliding periods’ at three monthly intervals</b>	N	N	N
<b>Cash flow is calculated as the ‘balancing item’ when all other items predicted</b>	N	N	N
<b>Monthly Results and Analysis review - 12 Key Performance Factors</b>	User defined	User defined	User defined
<b>Graphical time series trend, variation and moving average for each Performance Factor</b>	Most likely but not focused	Yes but not focused	Yes but not focused

Comparison – IPC Model Design with other Software			
IPC Model Design Principle	Budget Maestro®	Prophix®	Whitebirch®
<b>Flexible capital budgeting with automatic posting of asset acquisition and sale events</b>	N	N	N
<b>‘Continuous Adaption’ principle aids in control of the business</b>	N	Possibly	Planning emphasis
<b>Interface with MYOB™</b>	N	Most likely	Most likely
<b>Interface with QuickBooks®</b>	N	Most likely	Needs acct nos
<b>Caters for multiple entities</b>	Y	Y	Y

**Table 9 – IPC Model Design Comparison Table**

It is clear from the comparison table above that the other software packages have not been specifically designed to meet the needs of the small business as proposed in this thesis. Whilst they are all sophisticated software packages and no doubt could be configured to operate in a similar fashion to the IPC Model, they fail to address the characteristics of the small business OM who does not want or need complexity. This thesis proposes that the OM needs to be guided in establishing an improved management control system, only part of which is the planning function. Without the process as proposed in Figure 12, business control cannot be achieved. The IPC Model is designed to be an enabling tool to improved small business management.

#### **4.10 Implementation and Adoption Considerations**

As with any new software the implementation process is critical to its success. A learning process is required no matter how computer literate a user might be. The IPC Model does not just require that the user becomes familiar with the program operating procedures. There may be a need for some procedures within the organisation to change as a result of introducing the IPC Model. In this regard, the OM needs to fully understand the benefits that should be realised by using the software and that the time spent initially is a good investment.

A practical consideration in implementation is the means used to convince small businesses that enhancing their MCS with the IPC Model, has many benefits. In the current world of media and with the influence of the Internet, the IPC Model, no matter how useful it can be,

will not convince the busy OM of its merits unless it is well promoted. (Maybe there needs to be a motto for the OM. “*Is the business driving you or are you driving your business?*”)

The first step in implementation is to assess the current state of accounting procedures in the organisation. It is necessary that transactions are processed during or at the end of each month and that all bank accounts balance with the bank statements. If the OM normally reviews the Balance Sheet and Profit and Loss accounts in the first or second week of the new month, then the business is a long way towards fusing the IPC Model into its monthly business review cycle. It is possible, that the business may keep spreadsheet forward projection data, and if so, the IPC Model will make the forecasting process easier and may even replace existing spreadsheet methods.

In many cases, (Dyt, 2007; Brinckman 2010; Sandelin, 2008; Berry et al, 2006) accounting reports are not reviewed on a monthly basis. More likely they are reviewed quarterly, and in some cases only annually, after a visit to the accountant. In these cases, the IPC Model has the role of encouraging the idea that the business financial performance is reviewed monthly. Implementation in this scenario will be much more difficult, because established culture will need to be changed. Roger’s (2003) second key consideration for adoption “compatibility”, is not satisfied in this case. (See Section 2.7 where the five key attributes of innovations are listed with comments regarding their applicability in this research).

Not all small businesses will be a tuned to changing their MCS to include the IPC Model. Drawing on Reid and Smith’s (2000) work on identifying firm types, the *adaptive* type firm may be prepared to make the change. The *running blind* firms should use the IPC Model but may not think that such effort is worth it or they are not prepared to learn about improved methods of control or they are operating in such a dynamic environment that they cannot stop to implement a revised MCS. The *stagnant bureaucracy* type firm may be stagnant by design or may be well run using traditional methods and may not be interested in the benefits that the IPC Model has to offer. They may not be tuned to adopting this particular kind of innovation. Their structural and decision-making styles may be geared to conditions of the past (Reid and Smith, 2000; Gordon and Miller, 1976; Miller, 1975; Sandelin, 2008).

It is interesting to compare Reid and Smith’s (2000) work with that of Rogers (2003) with regard to the five adopter categories: innovators, early adopters, early majority, later majority and laggards. (Refer to earlier discussion in Section 2.7). It seems logical to

assume that the ‘innovators’ and ‘early adopters’ would come from the *adaptive* type businesses and the ‘later majority’ and ‘laggards’ equate to the *stagnant bureaucracy* type businesses. The *running blind* type businesses are not implementing careful planning or performance measurement. Their management systems are in disarray. They are probably growing too quickly. They do not subscribe to the idea of planning but would rather “just storm the castle” (Brinckmann et al., 2010, p.24). They may or may not have the characteristics of the innovators or the early adopters that would lead them to use the IPC Model. It is more likely that these types of businesses are in the category of the ‘early or late majority’ taking time to implement a software tool like the IPC Model. This reluctant adoption is despite the fact that the businesses that are *running blind* would greatly benefit from an improved MCS (Reid and Smith, 2000; Gordon and Miller, 1976; Miller, 1975; Sandelin, 2008, Brinckmann et al., 2010; Rogers, 2003).

It has always been envisaged that the initial phase of introducing the IPC Model to a business would be conducted in conjunction with a business consultant who would assist the OM with the first complete monthly cycle or more cycles if required. It is time well spent, as small business OM’s tend to have a limited support group to assist with strategy and planning issues. With a consultant, OM’s have the opportunity to explain their business and their business ideas with someone outside of the business environment. At the same time they are able to incorporate those ideas into their own customised structure in the IPC Model.

Despite this generalised statement, there will be instances where the OM is quite knowledgeable with regard to management accounting practice and may simply purchase the software, try it out and refer to tutorials (that would need to be available on line in a commercial version of the software). The OM of the Computer Store was this type of user having many years experience in business management and being a qualified chartered accountant.

It is also envisaged that the amount of involvement required by the consultant would vary from business to business. Some would need more assistance than others. The point is that the software is not like other utilitarian packages such as MS Office™ or Photoshop™ or even the common small business accounting packages such as MYOB™ and QuickBooks® and the methods adopted for implementation are an important consideration in the design of the software.



Of relevance here is Section 2.7 that describes the general experience with IT/IS adoption by small businesses. The Australian based survey by Armstrong et al., (2011) showed that business owners placed more importance on accounting software than on any other business functions but they were not emphasising management software, which is the area addressed by the IPC Model. One can conjecture that the lack of emphasis on management software was because that kind of software is expensive, too complicated and does not meet the needs of small businesses.

The literature review of Section 2.7 brought out the importance of the OM's IT/IS knowledge and propensity to be innovative. The next most important considerations were the "perceived usefulness" (Davis, 1989) of the software, IS maturity of the organisation and the sufficiency of the IS budget. These points suggest that in a commercial environment the benefits of improving MCSs in small businesses and how the IPC Model can help to achieve those benefits, should be promoted. "IS maturity" in this study's context relates to the status of the accounting IS and other supporting ISs such as POS. "Sufficiency of the IS budget" is a matter of perception from the OM's point of view. Again it relates to the value that the OM sees in the IPC Model. If improvements in the business's MCS result in increased growth and profitability, then the cost to maintain the IPC Model is not an issue for the OM.

#### **4.11 Software Design Summary**

In this section the principles of the software design were established. Then the design process that followed the DR cyclical method and involved test data sets and user interaction was described.

Following that, the functionality of the software was explained to show the elements of the MCS that were inbuilt and that aligned with the design principles. Other software was compared and it was concluded that the IPC Model is an innovation on what is presently available in the market. The factors affecting implementation and adoption of the software were commented upon.

Following the design phase, one should quite rightly ask whether the IS will be successful? DeLone and McLean, (1992, 2003) have developed a model for IS success known as the "DeLone and McLean Information Systems (IS) Success Model" (p. 9). The point of their model is to help researchers be aware that the measure of success (the dependent variable) is a "multidimensional and interdependent construct" (p.12). Their revised model, therefore

resolves into seven independent variables that interact with each other. The model can be described as either a process flowing from software creation to user intent to use, use, user satisfaction and finally net benefits to the individual and/or the organisation. The other way to look at the model is in a causal sense. For example the software quality causes a potential user to “want to use” and then (if the software is successful), using the software caused satisfaction and such satisfaction causes benefits to the organisation and/or the individual.

Whilst this research programme is dealing with a prototype or proof-of-concept application, elements of the DeLone and McLean IS Success Model were thought to be applicable in the conduct of the case studies. Of particular note was the need to be aware of the multidimensional aspects of success and to look for the interrelationships between the independent variables – especially intent to use, use and user satisfaction. As will be shown in Chapt 6, the analysis of the qualitative data collected brings out specific interrelationships that enhance understanding of the effectiveness of the software design.

In Chapter 5 that follows, the chronological experience with each of the case studies is reported. There is no attempt to analyse the data collected in this section as this is carried out in Chapter 6. The purpose of Chapter 5 is to give an insight into the implementation process and the impact that the software has on the OM and his/her organisation. The story of each case shows the richness and complexity of the data collected that has both quantitative and qualitative elements of interest.

## **Chapter 5 Case Studies**

The Case Studies in this research have a dual role. The first is to test and develop the software to gain experience with actual data and actual situations. The second is to apply the Action Research cycle (Figure 9) in an intervention where the researcher plays a role of instructor for software use and observer for measuring the impact of the software on the organisation and its user. It is through the five formal cases that the answers to the research questions are sought.

In addition to the five case studies, desk testing on different types of live data sets assisted with the relatively rapid development of the software. From as early as eight weeks into writing the software, desk testing began. Before that a preliminary case was used to investigate a start up's view of the business model and this experience influenced the choice of the questionnaire approach adopted for the software design. This case was a client of the author. He was not included in the official programme for the research as his business model was particularly sensitive commercial information. However the experience with his situation did influence the design of the Business Model section of the IPC Model.

The other four supplementary cases were used continuously throughout the research program for test purposes but were not part of the formal results analysis as they involve the researcher's own data or that of a relative. These tests were used for functionality and integrity of the program and were not intended to be impartial in any way.

On the other hand the desk test data was of great interest as it showed that the IPC Model design was quite generic in nature. The data sets comprised the author's own consulting company, her self managed super fund and her private accounts. The other data set was that of a relative to assist her with managing her personal finances. The interesting part of the test data is that the four sets came from quite diverse entities that still could benefit from planning and control. None of them had the complexity associated with an ongoing business entity but as with many different types of organisations, they operated with an accounting system that produced the necessary trial balance data input required for the IPC Model.

Prior to the research programme, the author maintained spreadsheet models for planning and control of her three entities. As soon as her data was transferred to the embryonic IPC

Model in circa November 2008 she used the IPC Model as her main planning and control system and stopped using the spreadsheet models.

The experience with each of the five case studies is covered in Sections 5.1 to 5.5 following. The first case study, Fitness Studio, is the case that was studied in the most detail. This study commenced as soon as the software was desk tested as being usable in a real life case. Even after the formal research work, interaction with this company continues on a semi-commercial basis after nine months of case study research and at the time of writing (June 2011) another 12 months, a total of 21 months altogether.

The other cases were started much later and were studied in less detail. This reflects the time and resource constraints of this particular programme. However, valuable and useful data (both positive and negative) was able to be collected nevertheless.

A summary of the cases and their attributes is shown in Tables 10 and 11 below.

CASE STUDIES			
Case No	Internal ID	Case Name	Purpose
<b>CASE 1</b>	Case ID 3	Fitness Studio	First formal Case Study from October 2009.
<b>CASE 2</b>	Case ID 4	Dog Day Care Centre	Second formal Case Study from March 2010.
<b>CASE 3</b>	Case ID 5	Clothing Stores	Third formal Case Study from April 2010.
<b>CASE 4</b>	Case ID 9	Building Materials Wholesaler	Fourth formal Case Study from May 2010.
<b>CASE 5</b>	Case ID 10	Computer Stores (Sales, Service and Education)	Fifth formal Case Study from October 2010.

**Table 10 - Formal Case Studies for Research**

TEST DATA and SUPPLEMENTARY (NON FORMAL) CASES			
Case No	Internal ID	Case Name	Purpose
<b>TEST 1</b>	Case ID 1	Bardak Ventures (Author's Company)	Provided program test data – operated in live mode since February 2009 using data from July 2007.
<b>TEST 2</b>	Case ID 2	Private (Author's Private Accounts)	Provided program test data for multiple company/branch data set routines – operated in live mode since May 2009 using data from July 2008 and forecasting from January 2009.
<b>TEST 3</b>	Case ID 6	Super Fund (Author's Fund)	Provided test data for first runtime application and to test effect of considerable aggregation of accounts using the Mapping Scheme. Operated live from March 2010 using data from July 2009.
<b>TEST 4</b>	Case ID 7	Finance Training (Former Client of Author)	Provided insights to problems with start-up companies and the development of early concepts re representation of a business model.
<b>TEST 5</b>	Case ID 8	Private Individual (Relative of Author)	Provided test case when developing a 24 month plan without any available past data. MYOB accounting set up after production of the plan.

**Table 11 - Test Data and Supplementary Informal Cases**

The first case study, Fitness Studio is described in considerable detail in order to illustrate how the software performs in practice. The case also shows in chronological sense how there was learning and growth occurring during the implementation process. The reader should also be able to discern a change in mindset of the OM over the period of the study.

As each case was different the descriptions that follow do not follow the same pattern. The reporting of each case had been tailored to what actually happened. The author had no control over whether the case was inclined to adopt the IPC Model or not. For example, after 10 sessions and approximately 47 hours of work on the “failed” Dog Day Care centre case, it was not appropriate to dismiss the case as not being relevant to the study. In fact the information gathered was considered to be excellent as it showed quite clearly the barriers that exist to the intervention of a MCS if the OM is not convinced that it will improve the business performance. It is just as important to examine the failures as well as the successes.

## 5.1 Fitness Studio

The first case is a Fitness Studio located in the Melbourne CBD that commenced operations in early 2007. It was essentially a start-up, being just 2 ½ years old when introduced to the IPC Model. The business is run as a trust with four unit holders. The person with whom the study was conducted (to be referred to as ‘Bruce’) is an owner (unit holder) and Chairman of the Board. He manages the business with respect to accounting, policy and operations. He similarly manages two other non-related businesses and thus his responsibilities to the Fitness Studio are on a part-time basis. He comes to each of his three ventures from a defence forces background and management studies (Wales) to Masters degree level.

### 5.1.1 Company History

The company was set-up in early 2007 by five partners who provided the initial capital from their own private sources. The story of this start-up venture is one of great turmoil and uncontrolled expenditure in the first 14 months. Bruce was originally employed as a general manager and then in the second year invested in the business and became an owner. The business restructured twice in the first year and managed to build up a substantial debt, which generated great concern amongst the unit holders.

In the early days the MCSs were developing as the business sought to build its customer base and reputation. As Bruce admitted:

*I've done a Masters degree in business admin and I have read 1000s of business books and all the errors that they talk about are true. There are pretty well two or three reasons ... and we duly followed all of them. It is just under estimating costs and over estimating income – those were the main ones. Our income targets were way out of reality and our costs were out of reality – hope – with a bit of hope it won't cost as much.*

Bruce, along with his colleagues, was greatly concerned with the early, rapid build up of losses in the business and described a critical point in the business's history. He arranged for the partners to attend a weekend retreat to reconsider their strategies and to work “on” the business. One of the problems that emerged was not that the business was losing money so much, but that the underlying goals of each of the partners were not in alignment. Bruce was careful to explain this fact. The goals varied from ‘altruistic motives’ to ‘fame and fortune’ to purely a ‘business growth model’ or a ‘lifestyle

model'. He said that it was this misalignment of goals that caused early problems in the partnership.

*We had a breakup amongst partners, which almost saw a collapse in the business. We had to go to mediation and 4 of the partners bought the other 2 out and released them from liability and the business was in steep financial trouble, ... which pretty much brought about the falling out amongst the partners ... there was quite a bit of despair – quite stressful. By the way, all of this was held off site – in fact, from the customer point of view and the staff – no one was aware of these troubles. I took over as Chairman of the Board then, and we really seized things up – and we cut back a lot of spending – we restructured again.*

Bruce describes revamping their business model frequently. In the first year, he described the business model as “fluid”. In the second year they did two business models and in the third year, they had settled on the formula that was documented in the IPC Model. (See Section 4.5.2 – Table 6 and in a more readable format, Appendix E – Table 18).

*We knew that we had most of the model correct. It was just a matter of persevering and making sure financially ... so the remainder of us put more into the business adding to the amount we had already put into the business. I don't think anyone would lend us any money [as] we had only traded a half year and we had managed to make a \$200,000 loss and made a \$300,000 loss in the 2<sup>nd</sup> year and no one is going to lend us money!*

*“Seriously ... we sat down at a Board meeting ... we voted on whether we call in the receivers or we continue to trade. And I am going like a lunatic handing out paperwork to show everyone that I already knew that the business had turned the corner.*

*It would have been one of these tragedies that goes on 1000 times a year with businesses that don't make it, but have committed everything to it. But I also think it had a positive effect and the positive effect was that it was so dire it actually dragged everyone's attention into focus - into survival mode.*

Bruce's approach was to set about collecting as much information as possible from their customers. He would talk to them in the lift and even take them for coffee as a way of

finding out what they wanted. The business invested in a sophisticated point of sale (POS) system that allowed customers to book and purchase classes on-line. This IS provided detailed statistics of customer behaviour. The POS system also enabled the business to communicate with customers via email with interesting articles and update blogs. The email communications were most inspiring and set up a special relationship between the customers and the instructors. There was much effort made to personalise the business through the web site. For example, customers are able to email their instructor directly via a personalised profile page.

As a result of the customer behaviour analysis, the business changed its product range to include “multi-passes” that allowed customers to buy a set of classes with selected combinations at different prices, but to use those passes as and when convenient. Bruce said:

*..we had a whole range ... we had 5 types of multi-passes ... they took off straight away and we started generating a lot of direct over-the-counter sales as opposed to direct debit sales and by mid June (2007) – only two weeks after we introduced it, I knew we were on the right track and I started scheming how to sack the 6 sales people!*

The problem that the start-up business faced at the time was that it was hard to generate enough regular customers at the speed needed to avoid building up debt and at the same time they had fixed costs (such as rent on inner city premises) that were not commensurate with the size of the fledgling business.

Bruce was aware that the company strengths were that personal communication with customers was part of the culture. A pleasant, calm atmosphere within the premises and classrooms was maintained and the instructors were highly skilled in their trade. The business operated in a niche market that differentiated them from the run-of-the-mill gym model. These attributes were the core of the business and gave them a competitive edge.

There is one person amongst the owners who gave the company its inspiration and developed the appealing culture that has become the draw card for attracting custom. Apart from being an excellent teacher who generates innovative training material, he has shown himself to be an excellent judge of character and selects outstanding instructors to



take the classes. This person is most certainly the entrepreneur for the business and typically he has no interest in financial management other than the end result.

The other two owners comprise a passive investor and a marketing person who is employed elsewhere by a large organisation. Both investors are not involved in the day to day running of the business. The availability of Bruce, whose job it is to work “on” the business and not “in” the business, is a key factor in the eventual success of this business.

Despite having settled on a satisfactory business model and curtailing out of control expenditure, the business continued to accumulate losses that had reached \$502,600 by the end of the financial year 2009. With efforts to improve the MCSs within the organisations, the expansion of product offerings and with contribution from the IPC Model intervention (having at least some impact), the carried forward loss was reduced to \$394,600 as at June 2010 when the formal study was completed. With continued improvements in the MCS, and continued commercially based intervention using the IPC Model MCS processes, by February 2011 the accumulated loss has been reduced to \$246,900. This is an excellent achievement and indicates that the company has gained control of its destiny.

Bruce commenced his first working session under this research programme with a preliminary interview in October 2009.

### **5.1.2 Analysis of Initial Status**

The initial status of the MCS for this case needs to be considered in the context of the company being a start-up that has only been trading for 2 ½ years when introduced to the IPC Model. It is evident that Bruce was working hard to gain control of the company and its initial cash drain. His focus was largely on detailed sales statistics in an attempt to understand customer purchasing behaviour and frequency of use. In this business the number of times a customer attends a class per week and the capacity rating of each class time slot are important parameters. Bruce was tracking these data using a complicated and detailed spreadsheet.

*There was a lot of work setting it up but then it is just a matter of adding data each week. I do not know that this project (IPC Model) would have made sense for the business at the very beginning probably not for the first two years.*

This is an important point supported in the literature (Section 2.4.1) that as a business grows there is a gradual implementation of increasingly sophisticated MCSs.

*We are now starting to be able to recognize common behavior with previous months and previous years. Whereas in a start-up – 18 months in - it is impossible. In the first 18 months it is very difficult to make business decisions based on what you have been doing so far and I think that a lot of businesses have knee jerk reactions. We had bad sales this week. We must be doing something wrong. Lets change everything. Whereas you do not know yet. Perhaps every year this is going to be a bad week for some particular reason.*

Bruce made use of spreadsheets to plan ahead, but with difficulty as is expressed here.

*And most of the processes we were working with were what we had available to us. So we had MYOB™. We had Excel™. They were our main programs for working out what we were doing. So we would sit down there and spend – leading up to a board meeting – and I would spend two solid weeks writing Excel™ programs that dealt with assumptions and forecasts and actuals and they were all inter-related. A massive amount of time.... But still a marked degree of inaccuracy because a lot was assumptions weren't specific, a lot of assumptions were best guess as they tend to be, but they get better as the year goes by.*

The spreadsheets did not have a link to the MYOB™ accounting system. Data were entered manually and evidently not on a regular basis.

A summary of the characteristics of the initial status of the business follows:

- There was a large carried forward loss.
- There were serious problems in the way that the accountants had structured the company accounts. Firstly, capital contributions from owners were shown as loans instead of equity. This meant that the balance sheet showed negative equity, which in reality was not correct. If the company had to close down, the owners would not have their loans paid back. Secondly, there was no recognition of Cost of Sales. Most of the cost in this company resides in wages and salaries but the total expense was recorded as an overhead charge when clearly the cost of instructors should be allocated to the courses that they take.

This accounting structure meant that Bruce was not able to measure his gross margin. He had no idea of this important figure and therefore could not control fixed and variable costs.

Thirdly, there was no monthly accounting for depreciation, which in the start-up was a significant figure. Bruce complained that he did not know his net profit/loss at the end of the year until the accountant, many months later, had made the appropriate journal entries to allow for depreciation.

- It seems that Bruce could have been slow in bringing MYOB™ up to date each month. He described having to be up-to-date – meaning reconciling with the bank – to meet the BAS requirements once every 3 months. The evidence suggests that he was not carefully looking at his accounts on a regular monthly basis.
- When doing the early forecasting with the IPC Model, it was apparent that Bruce's main focus and skill was in forecasting his sales, which is not an unusual focus for the owner of a start-up company. From discussions, it was evident that he was not using the MYOB™ Profit and Loss and Balance Sheet reports as well as he could. He was watching the YTD figures but not the monthly amounts.
- Bruce was certainly not familiar with forecasting GL Line Items in the Balance Sheet although he understood the fundamentals. There may have been a reluctance to embrace the concept of forecasting the Balance Sheet as being a useful exercise when his focus was mainly on the Profit and Loss accounts.

### **5.1.3 Chronology of the Adoption Process**

In the period from October 2009 until end of June 2010, 17 sessions were conducted. They took the form of discussions about the business and introduction and training in the operation of the program. Each session usually lasted from 2-3 hours.

A summary of the events that occurred during the 17 sessions is recorded in Appendix C. There was a total of 31.3 contact hours involved in this case.

### **5.1.4 The Business Model and Strategy Development**

Early in the intervention (Session 5, December 2009) Bruce was introduced to the Business Model section of the IPC Model. During that session he answered the

questionnaire built into the program and at the same time discussed his strategies for the growth and development of his business. The session took three hours.

Screen shots of the business model were shown in Section 4.5.2 above. As the screen shots are somewhat difficult to read, the business model has been re-produced in Appendix E.

It is discussed here to show how the business model for the Fitness Studio was expressed at the time and to compare that with the thinking at the end of the (somewhat extended) study period in February 2011.

This was the first time that the business model had been tested. Bruce did not have any problems completing the questionnaire and was quite able to add in pertinent comments for most of the items that are used to define a business model.

It is instructive to analyse the Fitness Studio's business model. The first observation is that Bruce was quite strategic in his thinking and was fully supportive of the business model concept.

*So it is an evolving thing – I think that it is important that businesses keep testing their model.*

Note that this view aligns with that of Chesbrough (2010). Bruce's detailed understanding of customer behaviour and the early development of an innovative pricing mechanism plus the clearly differentiated product offering contributed to the growing sales volume and the turning around of the business from loss making to profitable trading. The business model structure has allowed the customer orientation of the company to come through which may have been missed if the research only concentrated on the financial aspects of the operation.

*We have customers that have spent in 4 years over \$20,000 by coming doing classes with us. They clearly like doing it. So those customers are gold. ... And they are happy customers. It is all really good.*

*... but there are ... price increases, but even then I think that we have to be very, very careful. We have to be very aware of what our competitors are charging and competing offers people have. To me, I would rather keep the prices tight and keep the customers.*

Bruce was acutely aware of the effects of competition and the need to be tuned to external factors such as the economic situation and the changing needs of customers.

*Even in 3 years, the economy has changed, behaviour of people has changed, two of our newest competitors have closed but two new competitors have opened up.*

When it came to the question concerning Gross Margin levels, Bruce admitted that he did not know. The choice of 30-50%, agreed between the researcher and Bruce may have been correct based on FY2009 figures available at the time but this selection turned out to be too low.

*Margins? God! ... (Scratching his head). You are “medium”. We know that now because we looked at it. Yeah. I only just recently found out about it about half an hour ago. (Laughing). Some months you weren’t 30-50% but I think as a business I would describe you as medium. And that is what you should be going for anyway. You should be aiming for 40-45% if you can.*

After the fact, the margins achieved from November 2009 until June 2010 ranged from 65-70%. Thus the business model should be modified to show “high” not “medium”. This clearly illustrates how the presence of the IPC Model acted as a catalyst to improve the way that the financial data were recorded. This allowed more accurate performance measurement, which in turn assisted with strategic decision-making.

*Well I am very keen to make sure that as well as our practical, physical plans that I am actually restructuring the accounts so they support all those [the twelve performance factors] because once we get going with the plan, we will want to measure our performance.*

During the time of the study, the strategic thinking changed. In early December 2009 the emphasis was on expanding operations to another site, whereas later in 2010 the emphasis was on expanding the Instructor Education Courses.

The strategic view from Bruce’s perspective to engender growth as at December 2009 was:

*[Fitness Studio] is steaming along very well at the moment, to the point that we are looking to acquire some smaller suburban studios, to grow the business. We are also looking at a second city site early in 2010.*

Whereas a year later his thinking was:

*... so the only area for growth in the business is with the [Instructor] Education. We are doing that. And we are moving towards getting ourselves registered as an RTO [Registered Training Organisation]. .... And that is really important to us because there aren't many organisations in the country that are doing it, because becoming an RTO is a real challenge. There are a lot of barriers. And it is going to cost us this next year [2011], about \$50,000 just in the support [we need] to get the package prepared that will be approved by the government.*

The last section of the business model asks the user to select from a 'Growth', 'Income', 'Speculative' or 'Subsistence' Model. This section had real meaning for Bruce in the light of the early experience with partners having different overall goals. According to Bruce, this was a prime cause of the upset and the early changes in ownership of the company. Bruce's overall goal could not have been expressed more clearly than:

*I said that I am in this business (and I have no background in [fitness method]). I said that if I was a partner in this business my aim would be that sometime in the next three to five years, I would make a million dollars. I'm in for the money. It is just a business for me.*

### **5.1.5 Impact of the Software on the Organisation**

Given the stage of development of the Fitness Studio, the IPC Model process was introduced at an opportune time. The OM and his Board were moving towards increasingly sophisticated management control techniques with an emphasis on sales statistics and a generalised approach to overall cost minimisation.

When the intervention occurred, it was revealed almost immediately when setting up the Mapping Scheme that the accounting system structure was satisfactory for compliance requirements but totally inappropriate for management control purposes. Bruce was not aware that he should be splitting his costs into fixed and variable. He was also not aware of the gross margin contribution being made by each of his product groupings that he used in his spreadsheets. At the beginning sales were recorded in the accounting system as a single item. As Bruce described it: *"the business just being an all-in stew"*.

The impact of defining product groupings and then recording labour costs associated with each product group was significant. Bruce, having been convinced of the change

being necessary, went back and changed his MYOB™ accounts to record the data in the new way.

Other improvements to the accounting system were to express equity and owner's loans in the correct fashion. The accounting system had owner's equity as a liability, which gave the company a negative net worth when in fact the company was not insolvent. The "insolvency" portion was represented by owner's loans.

Bruce was also encouraged to account for depreciation on a monthly basis. Again the MYOB™ accounts were updated to bring in this change.

The next impact was the effect of the monthly review process. It forced Bruce to review his MYOB™ accounts more closely. For example, the case of the \$60,000 Australian Taxation Office (ATO) debt:

*I have spent a bit of time on the MYOB accounts. Breaking up what is long term debt and short term... has made life so much easier ... ATO ... I should have to pick up their error ... \$60,000 but it was all in one account and I thought that it was going to be well into 2011 before I cleared this debt. On my balance sheet I just had this one lump sum and as soon as I broke it out into long and short term debt, I realised something was badly wrong....*

The story was that the ATO had made a mistake in accounting for arrears but then corrected the mistake in the company's on-line statement. Bruce was not aware of the correction, which meant that the recorded liability in his accounts was \$60,000 when in fact it was much less.

In another case, Bruce was not recording the company credit card in MYOB. He had the impression that the amounts being charged to the account were not significant and therefore decided only to record transactions when the credit card was paid. This is the cash versus accrual accounting difference. However, around July 2010 he realised that this was not a satisfactory arrangement. He had found that the credit card was in debt by \$26,000. As he described it:

*But we got them ... then we found that they were substantially easier and cheaper for us to purchase overseas ... At that point these became quite major purchases. On Visa in May and June [2010] we probably purchased over \$20,000US of equipment, supplies and royalties from [Supplier] (Canada).*

*That is about \$26,000AU. So ... it was at that point that I had not kept a close eye on the transition from petty cash purchases to big purchases. And I haven't been running up until now, the Visa as a separate bank ledger on the Balance Sheet. Basically, I was using it like cash.*

Strangely though, once having included the credit card in the Liabilities of his balance sheet (July 2010) he wanted to keep the balance in debit, which is an interesting way to control cash flow in a company. Usually OMs welcome the 30 days of free credit provided by the credit card. Bruce showed that he is risk adverse and cautious in his approach to cash management.

The following quotation from my field notes regarding Bruce's approach to paying off debt is relevant.

*Bruce says that he pays off debt (loans and back tax) whenever he has the cash available. He said that it was a reactionary, opportunistic approach. When he starts forward projecting, he realises that the cash is just not there. The interpretation from this comment is that the IPC Model is doing its job!*

Figure 49 below shows firstly the significant performance of the company in retiring its external debt over the forecast period. It also shows that in Bruce's initial attempts at forecasting the rate of debt reduction (November 2009 to May 2010) were optimistic, but when forecasting was revised in June 2010, he showed an improvement in his understanding of the capacity of the business to retire debt and his forecasts were more accurate. This is a perfect example of how the IPC Model engenders a learning environment and how control is improved over time. (Note that there was no forecast before October 2009.)



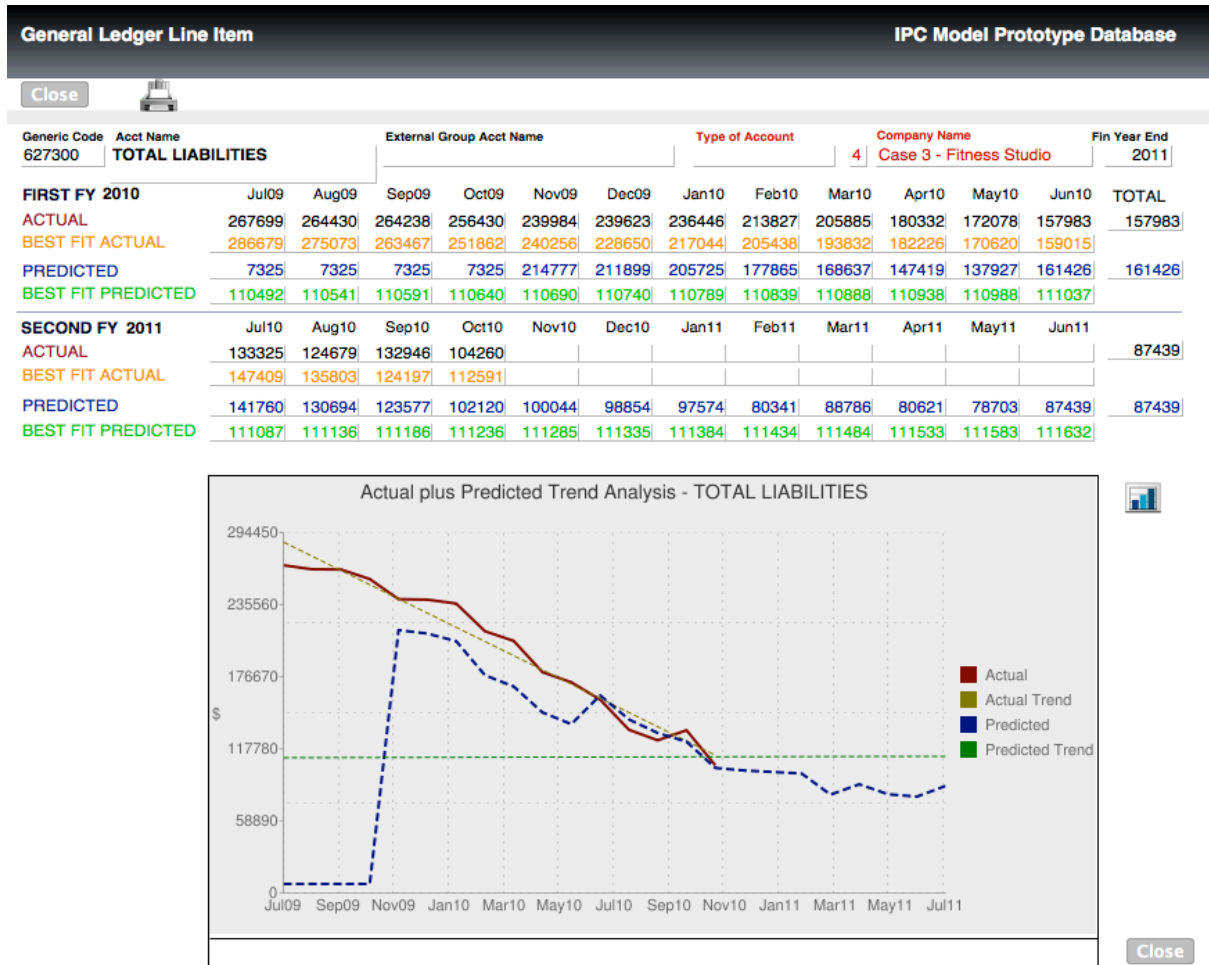


Figure 49 – Fitness Studio - Repayment of Debt Performance

Having spent a lot of time on the sales statistics available from the business’ POS, Bruce was able to forecast total sales quite well. However, his understanding of how the sales were split between the four product groupings that he developed as part of the IPC Model influence, were less accurate initially and then improved as time progressed. Table 13 below clearly shows how the IPC Model process impacted on Bruce’s thinking about his sales.

Considering the first line of the table – the sales for Instructor Education and Bruce’s perceptions of his business early in the intervention, it is possible to compare his initial perceptions of the Instructor Training sales level, his later forecast and the actual result. Bruce currently perceives this product line as having the best potential for growth.

*[Instructor] Education is becoming a much bigger aspect for us and we will probably see that go from \$100,000 in turnover this last financial year and for this year we will probably do close to \$300,000.*

Sales Forecasts \$'000							
	Perception for 2009	Actual 2009	Perception for 2010	Predicted 2010	Actual 2010	Variation	Predicted 2011
Instructor Education	100	149	300	135	173	28%	289
Large Group Classes		428		639	621	-3%	671
Private Classes		53		51	46	-10%	44
Small Group Classes		293		192	201	5%	265
<b>TOTAL</b>		<b>923</b>		<b>1017</b>	<b>1041</b>	<b>2%</b>	<b>1268</b>

**Table 12 - Fitness Studio - Sales for Year to June 30, 2010**

These perceptions were commented upon in December 2009. That was early in the IPC Model intervention when the business model was being formulated. At that stage the splitting of sales into product groups had not occurred within MYOB™. Bruce thought that his Instructor Education sales were \$100,000 for the financial year (FY) ended 2009 when in fact, when the MYOB™ accounts were modified and the data entered into the IPC Model, Bruce was nearly \$50,000 out in his knowledge of this aspect of the business.

The next observation is that he expected to achieve \$300,000 in the following financial year, but when it came to actually forecasting, after examining the past data, he predicted a much more conservative annual sales figure of \$135,000. The actual sales were in fact better than the prediction by 28%. However, the initial perception of \$300,000 is likely to be reached in FY 2011, which is an impressive 79% growth rate over the previous year.

Overall, Bruce's sales predictions for the 2010 financial year were within 2% of the actual which is commendable. His forecast of the most important product line (his "bread and butter") fell short by only 3%.

From the data produced in the IPC Model it was possible to prepare a table that showed Gross Margin by Product Group. Bruce did not have this information available before the intervention. Table 14 below shows the data for the FY 2010.

Product Group	Actual Sales FY2010	Gross Margin
Instructor Education	\$172,840	34.4%
Large Group Classes	\$621,141	77.4%
Private Classes	\$46,440	53.2%
Small Group Classes	\$200,755	75.0%
<b>TOTAL</b>	<b>\$1,041,176</b>	<b>67.8%</b>

**Table 13 – Fitness Studio - Actual Gross Margin by Product Group for FY2010**

The figures showed him that Private Classes are a much less profitable activity than the other two class types. He explained that he tolerates this activity as it leads to customers moving from private to small group as they become more accomplished in the discipline that they are pursuing.

The impact of having the Gross Margin figures available was captured in this following comment from Bruce:

*I already know now ... I already had a suspicion before the IPC came along ... Now I am pretty certain that there are some activities that we are doing ... actually - at best, breakeven. They are being disguised by the fact that overall the business is making profit and doing well. But actually they take up a lot of energy and a lot of time and a lot of cost. We would be better dropping some of that off and opening up the studios to doing more of those activities that give us more money.*

Despite the fact that the gross margin for Instructor Education is the lowest, Bruce still believes that this product line has the greatest potential for growth. This is born out in the analysis shown in Table 15 below that compares the two financial years of the study with forecasted data at the time of writing in February 2011. It is instructive to see how Bruce's perceptions were largely correct, but that now he has forward-looking data to confirm his expectations.

<b>CASE 1 – Gross Margin and Growth Rate Comparisons</b>						
<b>Product Group</b>	<b>Actual Sales FY2009</b>	<b>GM not known</b>	<b>Actual Sales FY2010</b>	<b>Gross Margin</b>	<b>Predicted Sales FY2011</b>	<b>Gross Margin</b>
<b>Instructor Education</b>	\$148,862		\$172,840	34.4%	\$310,095	96.2%
<b>Large Group Classes</b>	\$428,000		\$621,141	77.4%	\$666,640	88.9%
<b>Private Classes</b>	\$52,652		\$46,440	53.2%	\$93,691	55.1%
<b>Small Group Classes</b>	\$293,000		\$200,755	75.0%	\$244,441	61.7%
<b>TOTAL</b>	\$922,514		\$1,041,176	67.8%	\$1,314,867	65.0%
<b>Product Group</b>	<b>Actual Sales FY2009</b>	<b>Growth Rate data n/a</b>	<b>Actual Sales FY2010</b>	<b>Growth Rate</b>	<b>Predicted Sales FY2011</b>	<b>Growth Rate</b>
<b>Instructor Education</b>	\$148,862		\$172,840	16.1%	\$310,095	79.4%
<b>Large Group Classes</b>	\$428,000		\$621,141	45.1%	\$666,640	7.3%
<b>Private Classes</b>	\$52,652		\$46,440	-11.8%	\$93,691	101.7%
<b>Small Group Classes</b>	\$293,000		\$200,755	-31.5%	\$244,441	21.8%
<b>TOTAL</b>	\$922,514		\$1,041,176	12.9%	\$1,314,867	26.3%

**Table 14 – Fitness Studio - Business Performance Measures**

What is surprising is the popularity of the Private Classes and their high growth rate despite Bruce's efforts to discourage this activity because of its lower profit margin. A comment here is that a gross profit margin of between 53-55% for a small business would still be considered well above average and certainly would favour keeping the product in the product mix.

The reason that the Large Group Classes have a reduced growth rate based on forecasts for 2011 is that the studio is at full capacity. This poses a question for the Board. "How do we manage to increase sales of our base line product in a full capacity situation?"

This is where the planning and the impact of the IPC Model as a tool can really make a difference. The board is looking for opportunities to rent more space or to buy out

another similar fitness studio. Should an opportunity be found, the OM can quickly create a copy of the IPC Model and forecast the effect of the additional site in a separate data file. Another option is to open a new Company/Branch with its own login but under the same company registration. A new budget/forecast can then be prepared for the additional site treating it as a new profit centre. Money transfers between the entities are effected via into branch loan accounts or transfer pricing arrangements.

In one of the early sessions, Bruce's perception of the profit that could be generated in the business was ambitious.

*Looking roughly at the figures and documents, my aim next year, is to see if we can't get our profit up to \$150,000 and I reckon that there will be a little bit of growth with activity and there is also (after looking at the screen a few days ago, staring at it) I reckon that over the course of the year there is a good \$50,000 of expenses we can get out.*

In fact the profit for FY2010 was \$108,000 quite a bit lower than his perceived results without having prepared detailed forecasts. As of February 2011, the profit prediction for June 2011 is \$144,000, which is closer to his early perceptions but 12 months later.

Continuing with this theme, Bruce's early efforts at forecasting, resulted in a cash forecast that was roughly \$100,000 in the red as is shown in Figure 50 below. When Bruce first attempted his forecasts he tended to be somewhat conservative with his sales forecasts and having no past data on his gross margins, it is not surprising that his cash forecast may not have been realistic.

On examination though, the problem lay in Bruce's concepts (not actual figures) of how much cash (profit) that the business could generate. He had over estimated the rate that the company could pay off its external debt by about \$80,000 and under estimated the sales by the remainder. Later in the study, in about May to July 2010 when the forecasts were revised, the cash forecast was much more realistic. However, the forecast towards the end of the period appears to be ambitious and needs further examination.

The point of the study is that it shows clearly how the use of the IPC Model and the level of expertise in forecasting can improve with time as the OM learns more about the business and its key drivers. By the end of the study, Bruce's skills at forecasting had improved greatly but he still did not know how to diagnose the problem of the cash flow seeming to be excessive in the last quarter of 2011. Usually these problems arise in the

Balance Sheet area and Bruce’s familiarity with that area of the accounts is still developing. This is where, in the early stages, assistance from a consultant would have been needed to allow Bruce to benefit fully from the IPC Model’s full functionality.

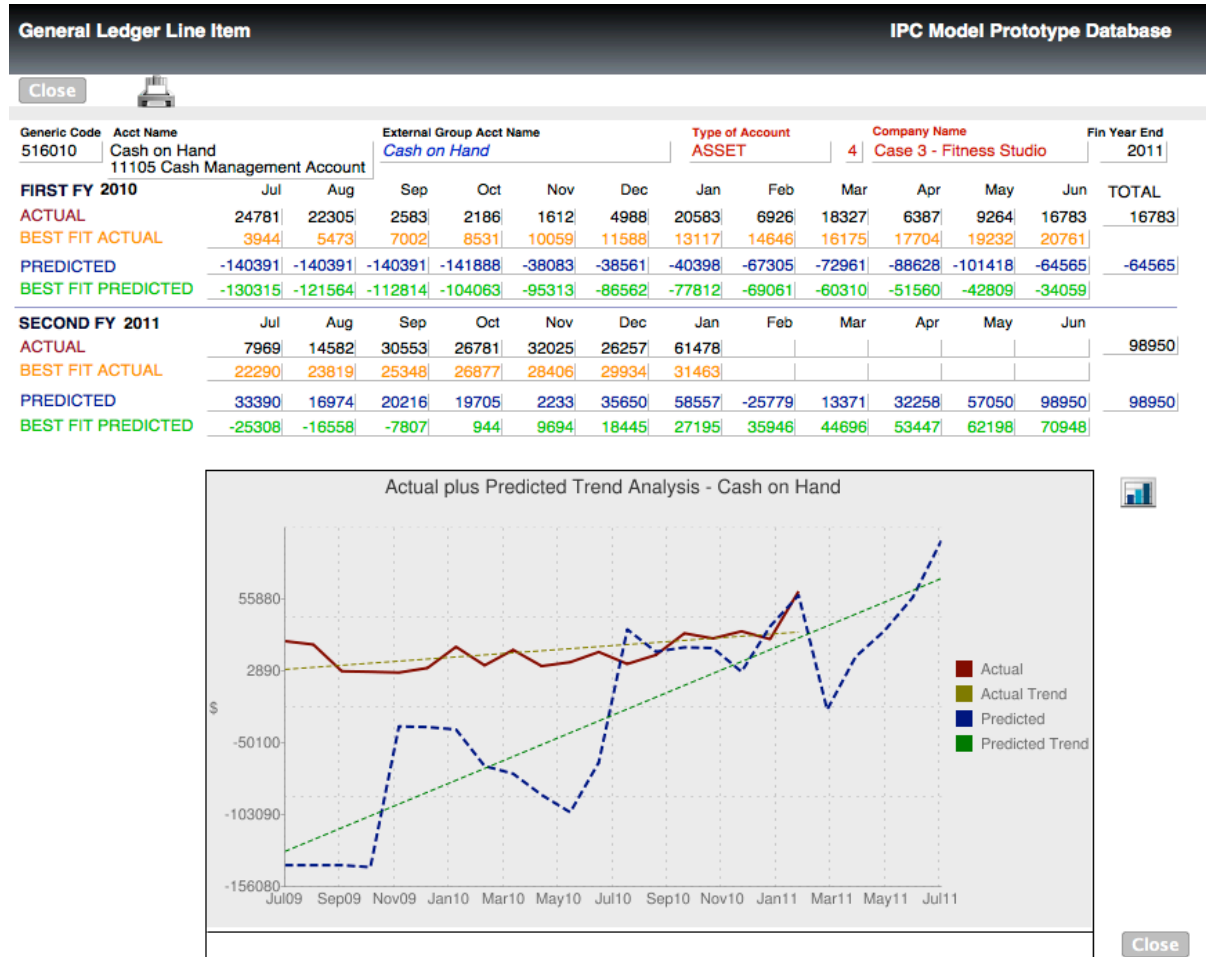


Figure 50 – Fitness Studio - Cash Flow Forecasting versus Actual Results

The analysis of the business performance as shown in Table 14 above is necessary but not sufficient to understand the business as a whole. This is where the impact of the “12 Performance Factors” (in the Results Section) and the ability to “drill down” with graphical analysis from the Financial Reports section needs to be assessed. Figure 39 in Section 4.7.2 above showed the total sales graph for the Fitness Studio.

The graphs, which follow, depict each of the four product lines separately and these are discussed from the point of view of how Bruce’s perceptions and understanding of his business improved over time. There is also an interesting play between what he thinks should be happening and what is actually happening. This interplay between what the data is saying and what Bruce believes it should be demonstrating, shows how the time

series view of the business is so much more informative than viewing standard financial reports from an accounting system.

The graphical representation over a reasonable period of time causes the user to have to think about what it means and what is happening. This is the process that Bruce had to face and in time he started to become more confident in what the data was telling him. In Bruce’s case it was quite a difficult process as the IPC Model data was presented in a different way than that in the MYOB™ data file.

After repeated assessment of results via the IPC Model, familiarity with the data and regular review and revision of the predictions builds trust in the system and it becomes gradually part of the normal management process.

In Bruce’s case, I would not be confident to say that he was benefitting fully from the process of regular monthly assessment during the period of the study. This idea will come out in the analysis that follows. There are four graphs to consider.

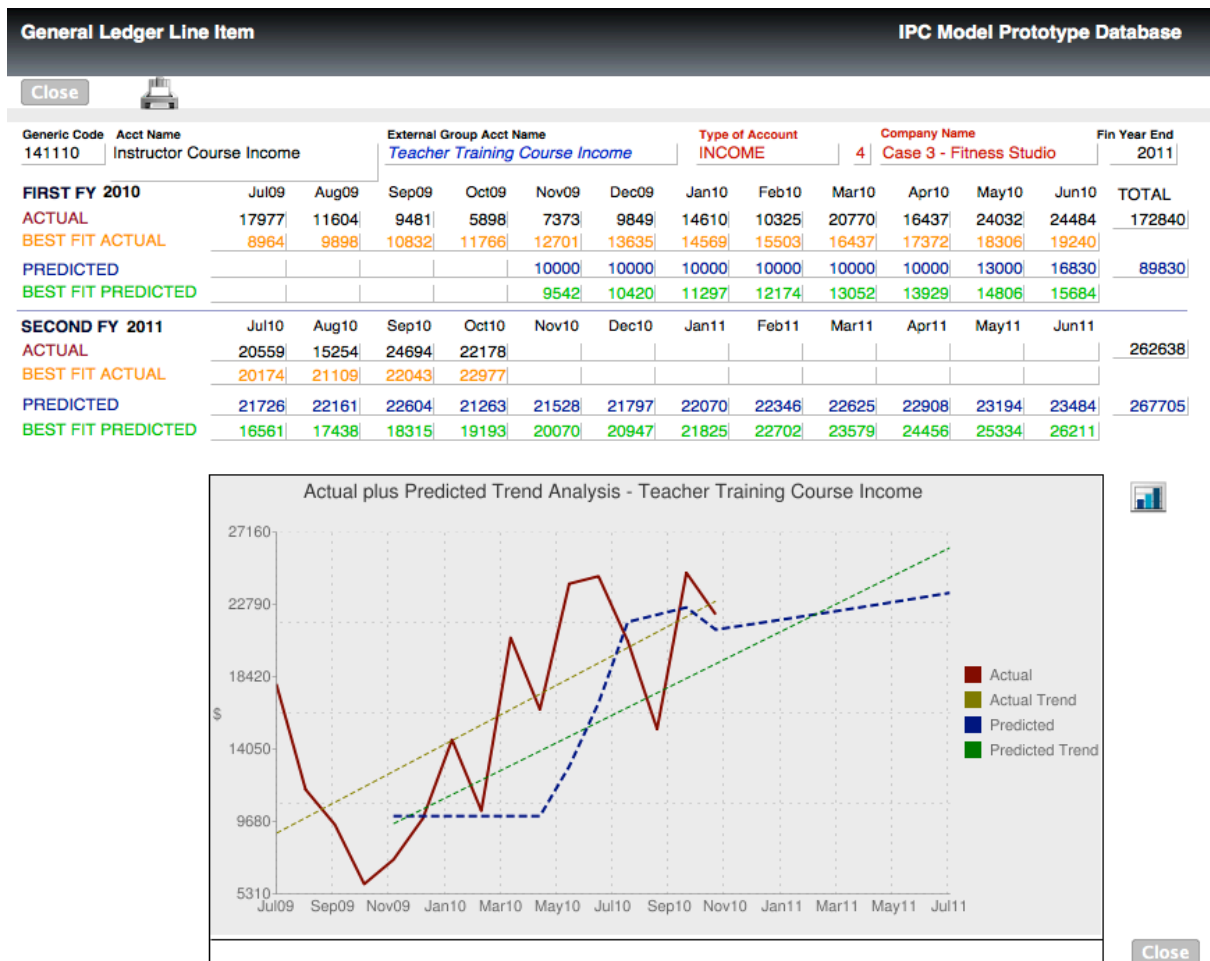


Figure 51 – Fitness Studio - Instructor Training Course Income

Instructor Training is the future growth area of the business from Bruce’s point of view and yet in between October 2009 and April 2010 he forecast a flat line (no growth). He obviously did not have that view at the beginning of the study. After he saw the growth (and maybe this triggered his view about being the growth area for the business) he used the method of forecasting using a growth rate and his forecasting improved.

Even then, his forecasted growth rate out to June 2011 is less than the past data shows. This indicates his conservatism or maybe uncertainty about the trend being on-going. With the benefit of having actual data beyond the study period, the actual trend is following the trend line that was indicated in November 2010 and is heading for \$310,000 as at June 2011.

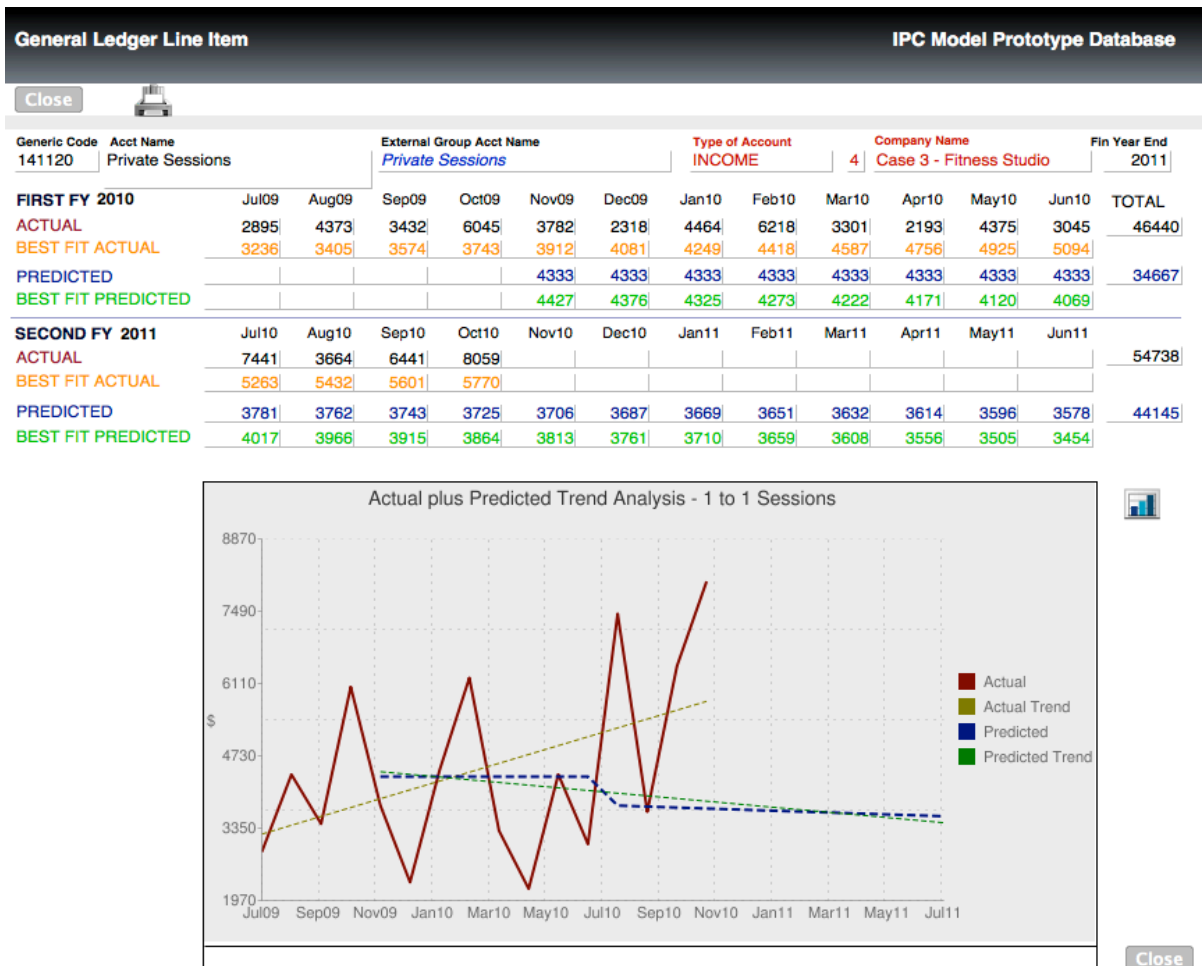


Figure 52 – Fitness Studio - Private Classes



The case for the Private Sessions shows an interesting psychology occurring. Bruce believes that the Private Sessions should be curtailed as they contribute the least to the total gross profit. He deliberately forecast these sales to be about the same as the previous year as shown in Figure 52 above.

When presented with the graph showing actual data with a significant growth trend, Bruce did not change his forecast. Even with the benefit of additional information in February 2011, Bruce has lifted the monthly sales to \$9000 per month but is not showing any growth. Predicted sales for June 2011 are now \$93,700 and not the prediction back in November 2010, which was \$54,700 (nearest \$100).

There are two things happening here. One is that Bruce did respond to the changed circumstance (sales are better than expected). He is trying to control this particular activity by limiting sales generated from this source. On the other hand, he notes that new customers or customers with particular physical problems, like the personalised teaching environment. As they become more confident, they graduate to small groups and then eventually to the large classes. It seems as though this example shows how the OM is using a control mechanism with one of the product lines. The cap that he has put on sales of this product may reflect the lack of space in the present premises that has been discussed earlier. The interesting rider to this “control” is that sales are continuing to grow despite Bruce’s concepts of curtailment. Maybe the situation is more complex than the figures reveal.

Figure 53 illustrates a classic growth pattern in the Small Group Classes and Bruce’s forecasting follows the growth trend indicated in the actual data. He was forecasting \$258,000 sales for the year to June 2011. Again with the benefit of future knowledge as at February 2011 the forecasted sales for the year are only \$244,000. The trend did not continue and appears to be settling into a steady monthly amount instead of exhibiting growth. However, this product line does exhibit a great deal of variation in sales from month to month, which makes forecasting difficult.

Again, all that Bruce can do is to continually reassess what is happening and modify the predictions as often as required. In this way he is ensuring that the short-term cash flow forecast is as accurate as possible.

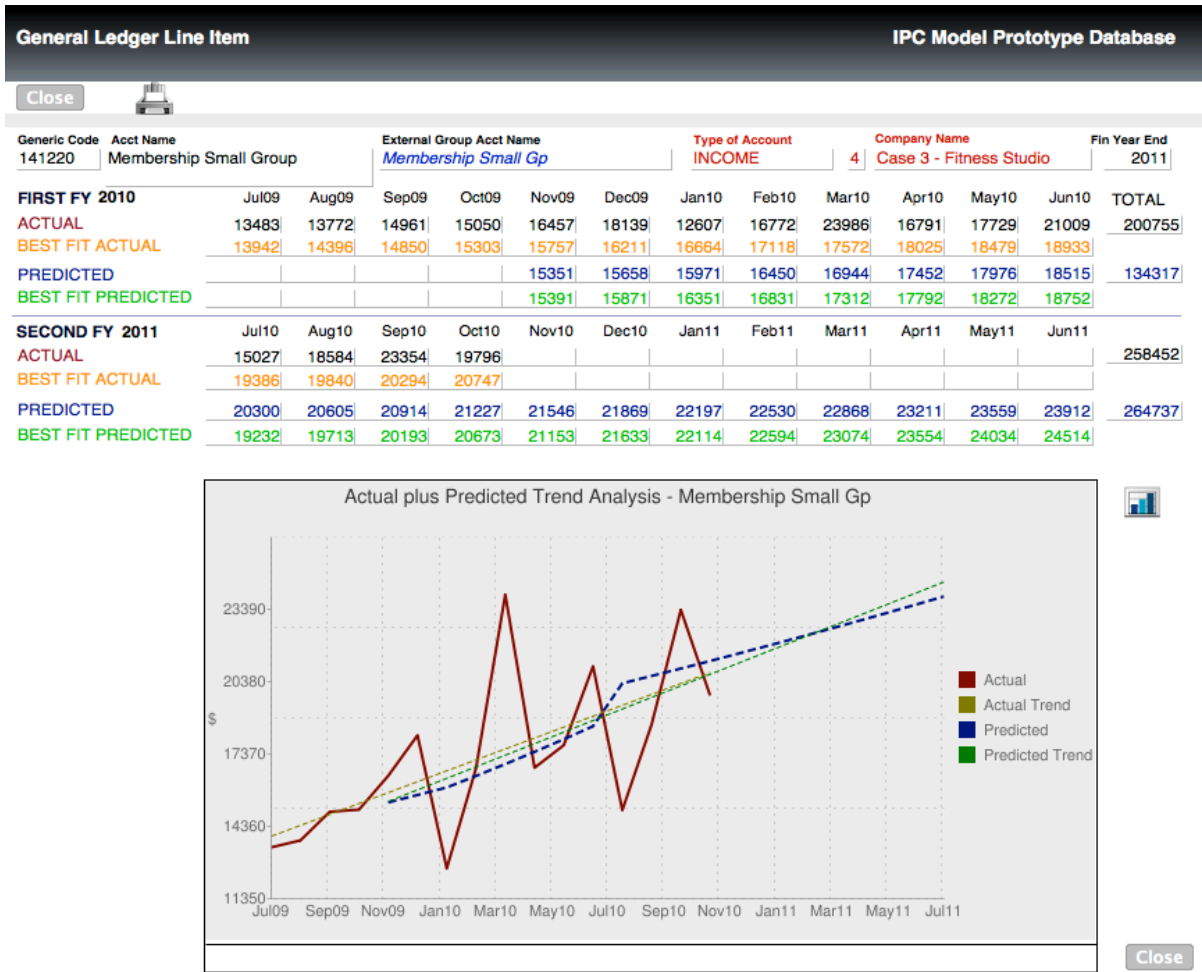
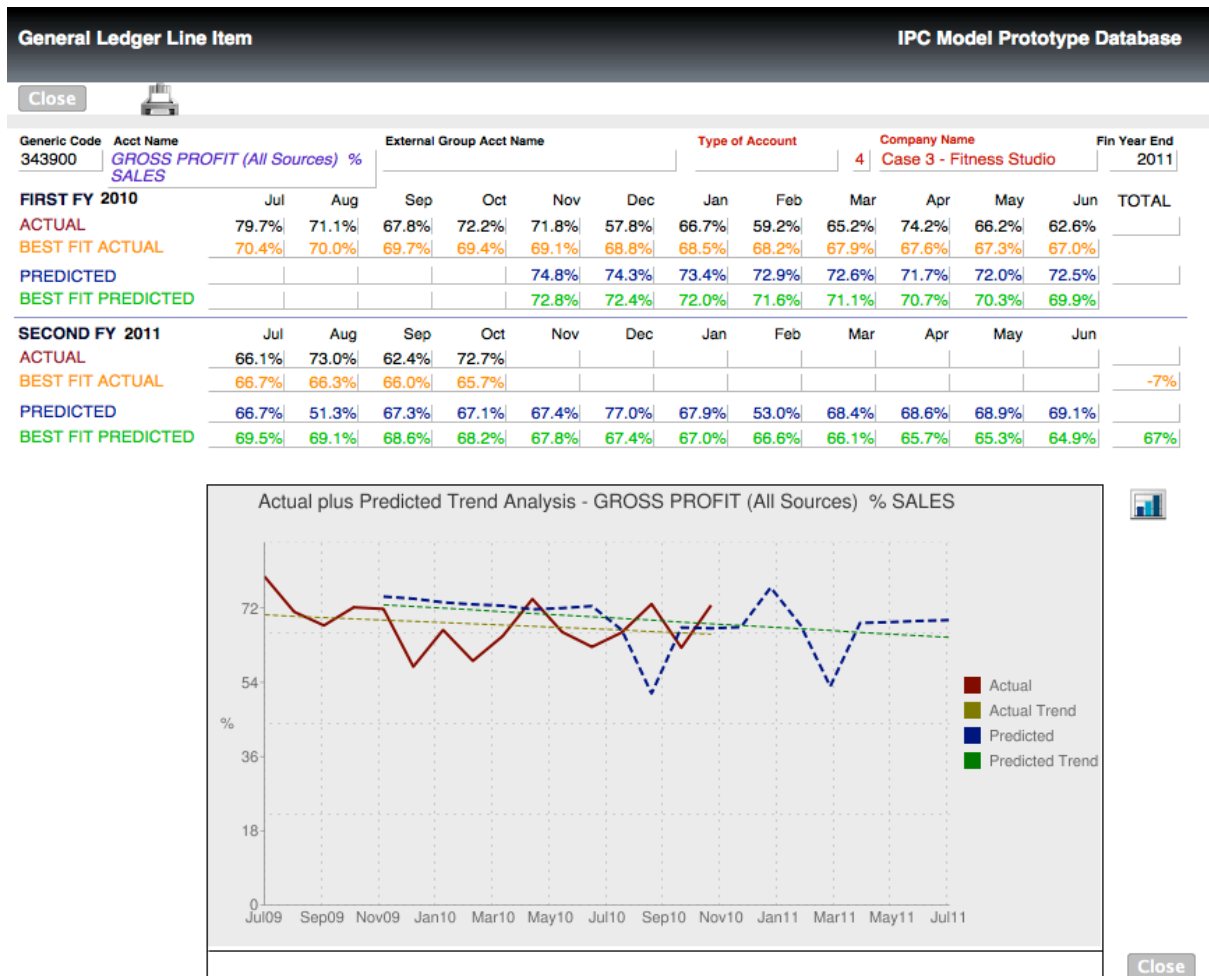


Figure 53 – Fitness Studio - Small Group Classes Income

If Bruce was making full use of the IPC Model, he should be re-forecasting both the Private Classes and Small Group product lines more regularly. From an observer’s point of view, Bruce is still slow to respond to the story that is unfolding via the IPC Model’s graphs.

The action, which improves forecasting accuracy is the concept of continuous adaption. In the ideal situation, the OM should take the time to review and change forecasts each month as required. Bruce is not taking that approach as he is hesitant using the software and his knowledge of the benefits of being more vigilant with the software is still developing.



**Figure 54 - Fitness Studio - Gross Profit as percentage of Sales**

Figure 54 shows that Bruce’s forecasting of sales and cost of sales yielded a gross profit forecast that was quite accurate. He forecast dips in June and December 2010. The June dip did not eventuate and the January, February 2011 dips are a result of the holiday season. With foresight knowledge this forecast turned out to be fairly correct.

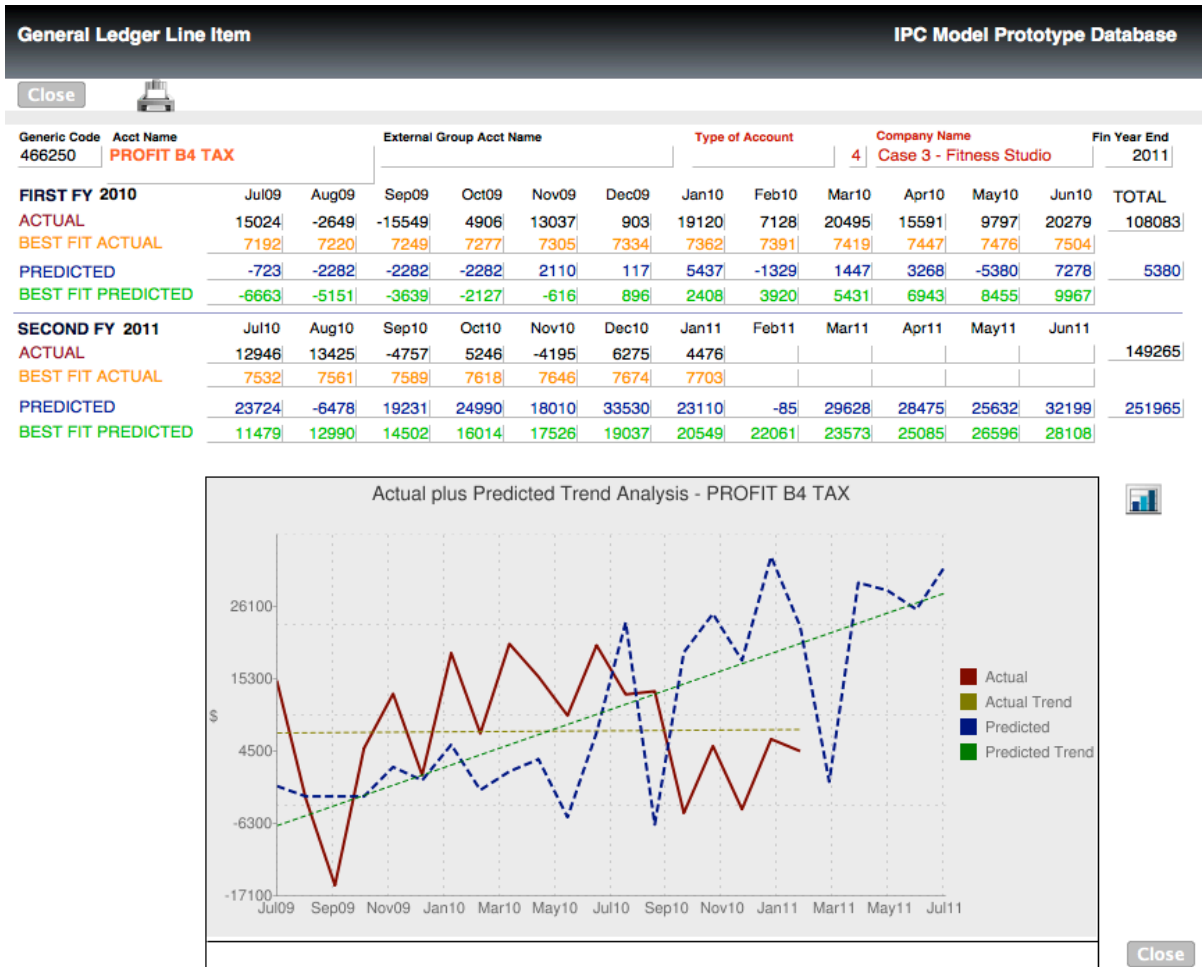


Figure 55 - Fitness Studio - Net Profit

Figure 55 shows that the net profit forecast is on track with the early forecasts from October 2009 to May 2010 being too low when Bruce did not have experience with forecasting outcomes for his business.

.... because October is a five week month or it may be November, but of those three months, two of those months we will run a P&L Loss for the month. This year [2010] we may not. For me, never mind the months when we make \$120,000 – if we break even in September to October, I will be punching the air. For me it is a major advancement for the business.

As it turned out, two of the months were not profitable as predicted and unfortunately Bruce was not able to “punch the air” (until much later).

Every thing looks on track up until the end of August 2010 but after that the actual and the forecast are quite out of alignment. This should be cause for concern or if there is a valid reason, then the forecasts need to be reviewed.

What actually happened is that Bruce did a new forecast in February/March 2011 extending the period out until June 2012. This was a much more carefully considered forecast (or in this sense, it is really the next budget based on the new strategies being developed for growth in the company). What this shows is that Bruce is using the IPC Model effectively now and has reacted to the results shown in Figure 55.

There are two factors in the Results section of the IPC Model that show Employment Costs as a percentage of sales and Fixed Costs as a percentage of sales. Figures 56 and 57 show the performance of the Fitness Studio with regard to these parameters.

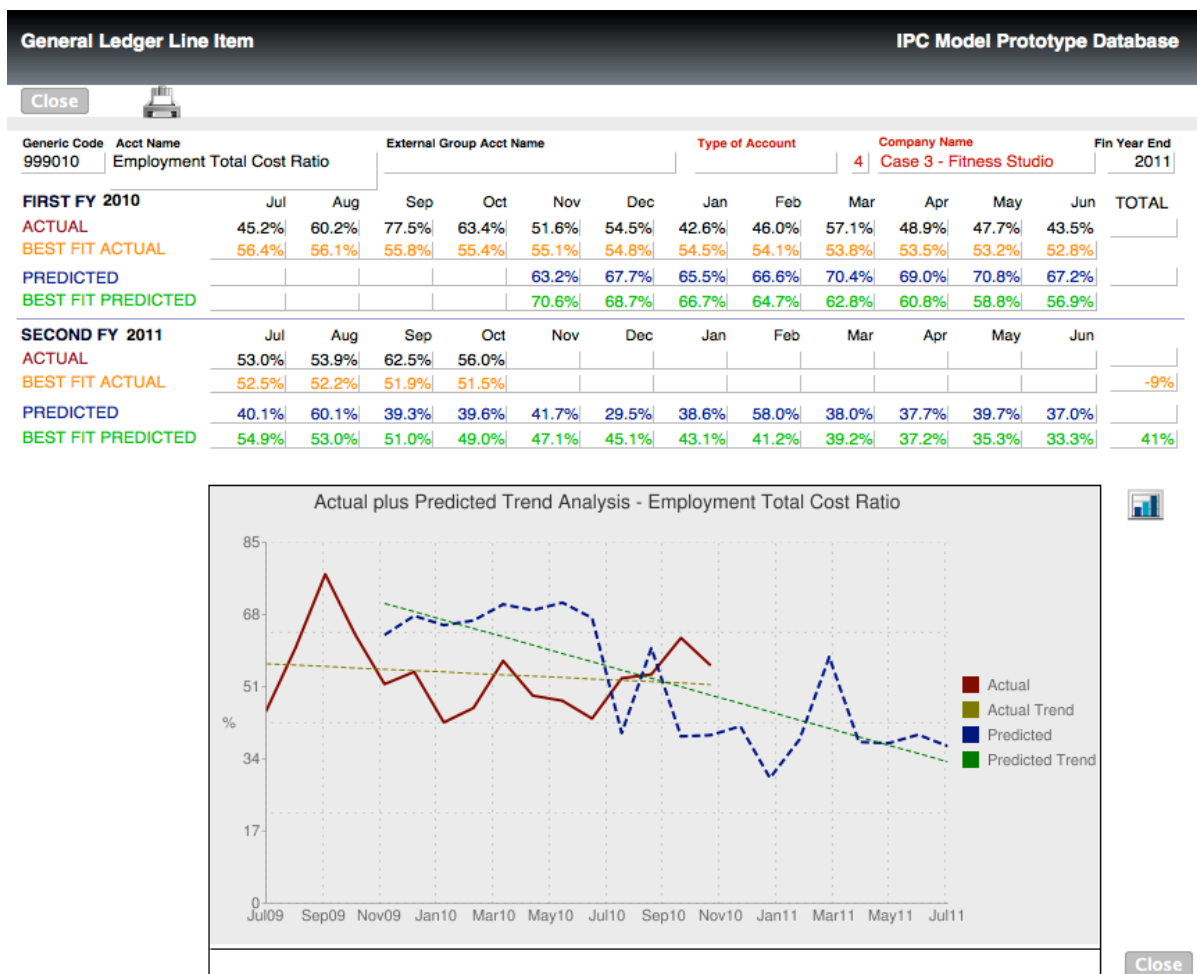


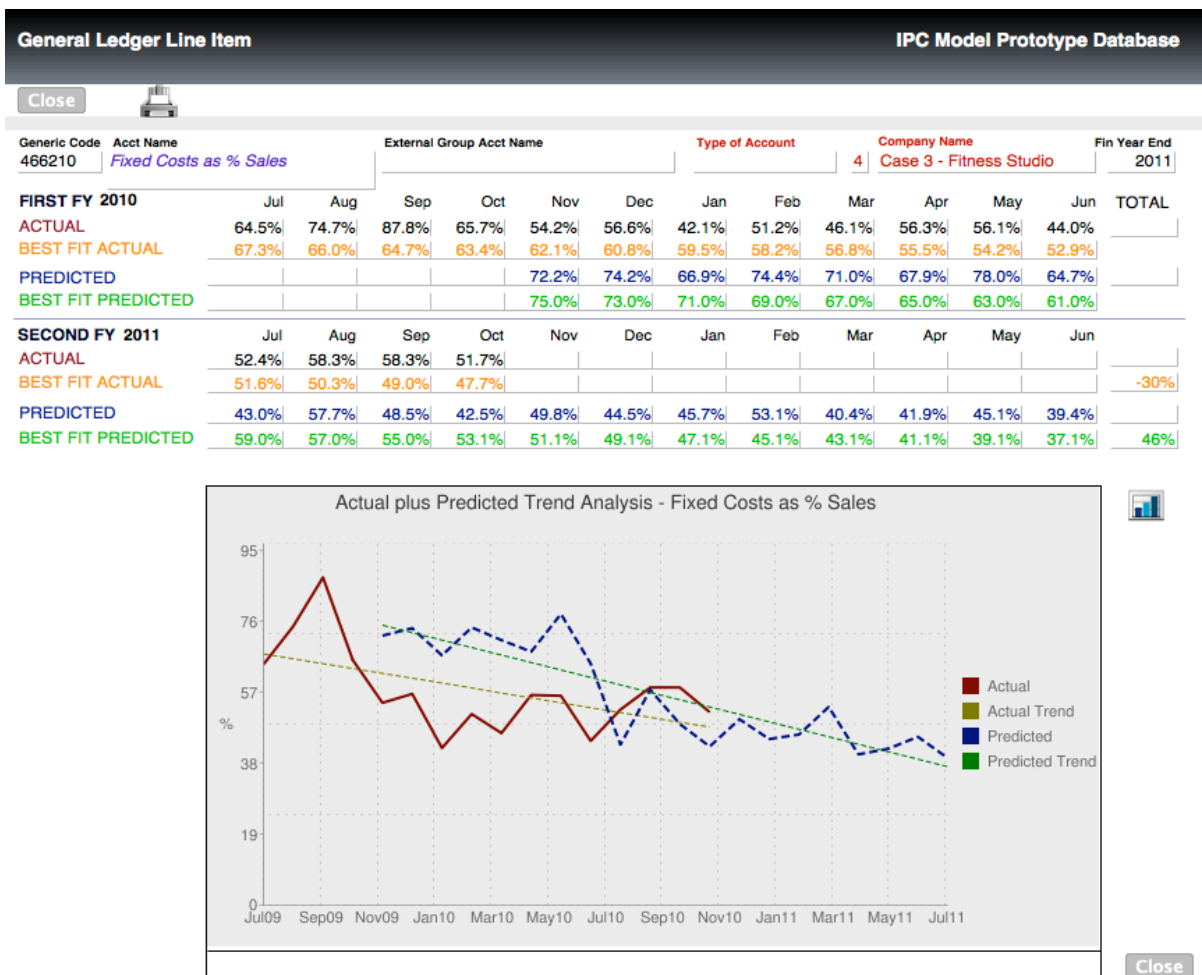
Figure 56 – Fitness Studio - Total Employment Cost as a percentage of Sales

*And more and more customers buy on-line. From a planning point of view, this means ... even 6 -8 months ago. At peak times we had to have 3 receptionists on just to deal with everybody. Otherwise we had this bottleneck. We have cut something like 60 hours out of the reception roster recently and no one has noticed. Because we have shifted a lot of the customer behaviour over to on-line buying.*

*They have their little barcode thing that tops up their account. They (at reception) just swipe and it calls you up and registers your usage against your multi-pass.*

Clearly the reduction in staff costs (the major expense items for the Fitness Studio) from September 2009 to January 2010 is evident and is a major factor in turning the profitability of the company around. The forecast shows how Bruce was determined to keep the downward trend in these costs. As work continues with the company, it is pleasing to note that the overall slightly decreasing trend is being maintained.

Similarly Fixed Costs as a percentage of Sales as shown in Figure 57 below is trending downward. These trends show that the company is under control and that there are several key factors contributing to their success. The IPC Model easily allows Bruce to see what is happening and to plan his strategy accordingly.



**Figure 57 - Fitness Studio - Fixed Costs as a percentage of Sales**

The clear difference between the IPC Model process and the static reporting of financial reports is the ability to watch trends. The graphs shown here illustrate the variable

nature of the business processes but one can easily see what is happening and react to the events.

Crucial to the process is the continuous Adaption that is necessary to effectively control the business. My opinion is that despite the long association with the company, Bruce is still not really using the inherent IPC Model process as effectively as he might. However, his use of it is increasing with time with assistance from the “consultant”.

Bruce still has difficulty with forecasting the Balance Sheet and only recently (March 2011) became aware of the Capital Budgets facility. Previously he was not planning any capital purchases but if the business is to expand into a second site, capital purchases need to be planned. Bruce was impressed with the Capital Budget system and is looking forward to using it in the future.

### **5.1.6 User Reaction to the Adoption Process**

In Session 15 on 21<sup>st</sup> April 2010, Bruce was asked a series of questions about his view of the adoption process. Given that the research aim is to determine “*Can a software based MCS be effective in encouraging small businesses to improve their planning and control function?*” Bruce’s specific responses to the questions showed that after six months of introduction to the IPC Model management process and experience with its use that there was in fact improvement in his planning and control functions.

The full text of the interview is included in Appendix D. The purpose in reproducing most of Bruce’s replies in the appendix is to illustrate the nature of the issues that are important to a small business and the detail to which they need to be addressed in order for the organisation to succeed in its endeavours.

Note that the questionnaire was not used with the other cases as their level of adoption of the IPC Model was not considered to be sufficient to gain value from a questionnaire approach. The working sessions were considered to be yielding sufficient data. The research design did not call for the use of questionnaires and the one prepared for Bruce had the nature of an experiment. The data yielded in Bruce’s case was interesting but not of significant merit to be used as an alternative format for data acquisition.

Whilst some of the comments may appear to be obvious, particularly from an accounting theory point of view, they are practical issues that are often not easily solved by the small business operator. Bruce’s comments clearly show how his thinking changed as a

result of having the IPC Model act as a catalyst in encouraging him to making changes in his management practices.

There are also barriers to small business operators, like the issue of the accountant's view of the world compared with the needs of the OM to address management issues and to measure performance in a sensible way. This point is expanded upon in Chapter 6 as well.

## 5.2 Dog Day Care Centres

The second case is a company that is run by a husband and wife team (whom we will call Bill and Annette). Bill was first approached in March 2010. The interaction started with Bill providing the General Ledger file from his accounting system for 2008\_9. He was quite interested in the project and thought that the IPC Model would be useful for the franchises that he was planning to set up.

The study involved 10 sessions including deskwork by the researcher and interactions with Bill via telephone. There was an approximate total of 47 hours spent on this study.

He was not so concerned about his own business as he indicated that it was a strong cash generator. His wife, Annette, is the entrepreneur behind the business. She is meticulous in the way she runs the business having excellent operating systems in place and innovative means to interact with her customers. However, Bill confided that she was not interested in the accounts commenting that she "knows nothing about accounts".

Bill, on the other hand has a commerce degree, is an author and a process engineer. He was interested in the project and agreed to participate. After some effort in dealing with another accounting package, the IPC Model financial reports output for the previous year was shown to Bill. His comments were "*oh, I have never seen the accounts presented that way. Anyway, they are all wrong!*" He said that a friend of theirs had been doing the bookkeeping and that the accounts were not set up correctly. He then said that for the 2011 financial year the accounts had been re-done and were in the hands of their accountants.

There have been six sessions in this case and on four additional occasions, Bill did not turn up to the pre-arranged meetings. The researcher tried to continue on using remote communication means and travelled to Bill's Dog Day Care Centre to have the meeting. This is generally not a good idea as Bill is continually interrupted with telephone calls, dogs



barking and customers collecting their dogs. It is not the best environment to set about the planning function.

The study met a stumbling block when requiring Bill or his accountant to spend 20 mins entering in account numbers into their accounting system so that the IPC Model could read the data. It was not appropriate at that stage in the research effort to spend more time on the IPC Model development when, with a small amount of time spent by the case study participant, the past data could be read. Given also that time had already been spent on writing an interface to the QuickBooks® accounting package and modifying the program to work on a different operating system. The learning from this event is that a commercial version of the software will need to be able to cope with alpha account names as account identifiers in addition to account numbers.

In September 2010, the case came to a halt as Bill's other business commitments precluded completing the research in a timely fashion.

The learning from this experience is that the business owner needs to commit sufficient time and effort for the IPC Model to be of benefit.

### **5.3 Clothing Stores**

The third case is a family business that operates three up-market (haute couture) clothing stores. Although this case did not adopt the IPC Model the owners of the business were most enthusiastic about the project and good progress was made during the period of the study. It is best to consider this case as a continuing work-in-progress. Following the research programme the owners have indicated that they are keen to continue the work commenced and move on with the aim of significantly improving their MCS.

The study started in April 2010 but there was a delay for a few months as the owners resolved some personal issues. Then after re-commencing in July 2010, over 19 sessions took place until January 2011. This case study involved a total of approximately 60 hours of contact including extra deskwork by the researcher.

The field notes from this case reveal the extreme level of difficulty faced by the researcher during the IPC Model implementation process. It would have been easy to reject the case as being unsuitable and move on. However, research is not worth doing if only the easy cases are studied.

This study shows just how difficult it is for business owners who do not have any financial management training, to learn how to effectively implement the planning and control function. The support that one would imagine coming from their accountant did not appear to be forthcoming. His focus was only directed, apparently, towards compliance issues and not on management control. Further learning from this case is revealed in the analysis section of the thesis Chapter 6.

The decision to persist was also based on the fact that the owners were extremely receptive to learning more about how their business operated and appreciated the sessions that were held. They were learning all the time and made considerable effort to improve their accounting system, which was the main reason for the inability to complete the installation process.

Even though there was only partial implementation, the process had a significant positive effect on the owner's understanding of their business and how planning and control could assist them.

### **5.3.1 Company History and Structure**

This is a family business that commenced with a single store in 2003 and has progressively expanded to three retail stores. The group sales turnover is around \$A4.3m. Each store is operated as a separate entity with the [Location 1] store being the main store that purchases stock and distributes a portion of the stock to the other stores in [Location 2] and [Location 3]. The business is obviously successful in its area having won prizes as one of five best international, up market clothing and accessories stores for men and women. The business has established a loyal clientele that are well looked after by the store's owners and staff.

The key players in the business are a husband and wife team (whom we will call Hugh and Melinda) and Hugh's sister-in-law, Angela. Melinda is the creative person in the company who has developed its special style and atmosphere. She is the entrepreneur but knows nothing about "the books" and is not involved in financial matters. Melinda's husband, Hugh has a background in managing prestige car outlets and joined the business as its full-time manager in the last two years or so. Angela, his sister-in-law is the bookkeeper for the company.

Up to 95% of the stock is imported but the owners want to introduce new lines based on local manufacture with the aim of reducing the imported lines to 70% over time. Hugh keeps detailed spreadsheets of daily sales for each shop. Sales dockets are written manually and then at a later date entered into the accounting system. Review of the accounts was occurring only quarterly when the returns for the Tax Office were due. Angela was concerned about the big workload in keeping the accounts. She also confessed that her knowledge of accounting principles and the accounting software being used was minimal.

In terms of operations, it seems that they have established an excellent supply chain management system in the way that they efficiently import their product. It is important for the business to have a stable source of supply of the high-end apparel and then to have a chain of reliable middle people who ensure efficient delivery and customs clearance in a timely manner.

Hugh pointed out that the handling of exchange rate finance was crucial and hedges his Australian dollars over an 8 month period. This move removes the uncertainty of exchange rate fluctuations and allows the stores to offer stable pricing.

### **5.3.2 Summary of Key Events**

In this section a summary of what occurred in the study is provided. The events give insight into the difficulties that can be faced when introducing a software tool that is an adjunct to the existing accounting IS in the organisation. If the accounting system is not designed to assist management then the task becomes one of making changes and adapting where possible.

On examining the accounts early in the programme, it was apparent that the outstanding deficiency was that there is no stock control system in place. In session 2, it was revealed that the stock figure in the accounts was an “old” one! The external accountant runs a separate set of books to enable completion of the tax returns. The business is apparently operating profitably but there was only rudimentary management control that mainly focused on sales and sales statistics. Most of the business planning appeared to be based on experience and rules of thumb, with the most critical decision being the pre-purchase of stock for seasons up to 18 months into the future.

Faced with the situation described above, one wonders if this company would be able to absorb the relative sophistication of the IPC Model. This case is a perfect example of having to accept the reality and look for ways to accommodate the situation as found. In the longer term the owners would need to invest considerable time and effort improving their management practices and incur expense installing a POS system in order to benefit from the IPC Model.

It was decided to work on the main store [Location 1] only for the purposes of the research. A POS system was selected and the owners indicated that they would most likely implement it sometime in the future. The accounts were reconciled with those of the accountant and past data was input to the IPC Model.

Both Hugh and Angela operated the IPC Model. Hugh did the business model and the sales forecasting. Angela did the expenses and with help, the balance sheet. She noted that she was learning about accounting as she went along. She was familiar with the characteristics of individual accounts (GL Line Items) and quite effectively was able to forecast.

Although Angela was quite fluent and knowledgeable about each individual account and could forecast quite readily, her understanding of the Profit and Loss and Balance Sheets reporting was quite weak. It is quite apparent that she does not examine these reports at all.

When beginning the forecasting process for the first time, Angela felt much more comfortable with a shorter forecasting time frame and more past data. A quotation from the field notes shows how the process of forecasting has a learning effect for the user and also shows how human interaction with the software can be quite effective.

*It was interesting to watch the process used to determine the Merchant fee line. Angela thought that the percentage that she paid was 2.5% but after allowing the program to calculate the result, she looked at the total and said, by feel, that that amount was too high. She experimented with various percentage figures repeating the trial and error process about 5 or 6 times and ended up with a percentage figure that was about 1.3%. This is an example where an automatic process would not work. The interactive method that Angela instinctively used was effective. Only time will tell how accurate her judgment was. The fact that she had the past 12 months data as a guide was of course helpful.*

The greatest difficulty for the researcher in this case was to make sense of a set of accounts that had missing data. It was necessary to build external spreadsheet models to derive the most likely stock levels each month based on some assumptions about net profit and gross margins. The purpose of simulating the stock movements was to provide realistic data for the IPC Model and to provide a learning platform for the owners in developing their forecasting skills.

This modelling was like solving a puzzle with pieces missing and only clues to go by. But the accounting system is a model in itself with one part dependent on the other. Thus, it was possible to derive the actual margin being achieved by a trial and error process.

Figure 58 below shows the final spreadsheet model that derives what the stock level should be each month assuming that the store’s net profit for the year is break even and that the Gross Margin is on average 44%. One of the big problems was that the transfers of stock from the main store to the other two stores was hidden in an account called “Imports” which essentially was the purchases account in cost of goods sold.

CASE 3 CLOTHING STORE		Temporary Calculation of Stock									
		Opening Stock	Sales	Assum GM	Assumed COGS	Freight & Duty	Imports	Sales to Other Stores	Net Imports	Closing Stock	% of Stock going to other stores
JUL	2009	\$490,451	\$157,642	0.56	\$88,910	\$19,646	\$131,961	\$51,588	\$80,372	\$501,559	39.1%
AUG	2009	\$501,559	\$144,462	0.56	\$81,477	\$21,023	\$148,671	\$83,175	\$65,496	\$506,601	55.9%
SEP	2009	\$506,601	\$130,526	0.56	\$73,617	\$24,651	\$140,027	\$61,818	\$78,209	\$535,845	44.1%
OCT	2009	\$535,845	\$180,135	0.56	\$101,596	\$0	\$0	\$52,273	-\$52,273	\$381,976	
NOV	2009	\$381,976	\$156,046	0.56	\$88,010	\$31,944	\$218,230	\$93,636	\$124,594	\$450,504	42.9%
DEC	2009	\$450,504	\$157,583	0.56	\$88,877	\$89,280	\$111,937	\$169,271	-\$57,334	\$393,573	151.2%
JAN	2010	\$393,573	\$130,869	0.56	\$73,810	\$11,987	\$227,837	\$98,182	\$129,655	\$461,405	43.1%
FEB	2010	\$461,405	\$129,178	0.56	\$72,856	\$0	\$0	\$60,909	-\$60,909	\$327,640	
MAR	2010	\$327,640	\$180,019	0.56	\$101,531	\$16,674	\$187,613	\$105,075	\$82,538	\$325,321	56.0%
APR	2010	\$325,321	\$196,671	0.56	\$110,922	\$21,137	\$257,763	\$55,909	\$201,853	\$437,389	21.7%
MAY	2010	\$437,389	\$199,551	0.56	\$112,547	\$25,587	\$295,956	\$61,818	\$234,138	\$584,567	20.9%
JUN	2010	\$584,567	\$151,406	0.56	\$85,393	\$26,748	\$272,317	\$115,001	\$157,316	\$683,238	42.2%
JUL	2010	\$683,238	\$119,836	0.56	\$67,587	\$0	\$2,727	\$16,324	-\$13,597	\$602,053	598.6%
AUG	2010	\$602,053	\$174,534	0.56	\$98,437	\$13,288	\$103,521	\$59,941	\$43,579	\$560,484	57.9%
SEP	2010	\$560,484	\$159,560	0.56	\$89,992	\$28,933	\$256,319	\$83,182	\$173,137	\$672,561	32.5%
OCT	2010	\$672,561	\$187,944	0.56	\$106,000	\$17,941	\$0	\$0	\$0	\$584,502	
NOV	2010	\$584,502	\$191,327	0.56	\$107,908	\$23,568	\$230,000	\$114,088	\$115,912	\$616,073	
DEC	2010	\$616,073	\$194,771	0.56	\$109,851	\$45,263	\$125,000	\$62,004	\$62,996	\$614,481	
JAN	2011	\$614,481	\$189,902	0.56	\$107,105	\$27,158	\$230,000	\$114,088	\$115,912	\$650,446	
FEB	2011	\$650,446	\$185,154	0.56	\$104,427	\$12,890	\$0	\$0	\$0	\$558,909	
MAR	2011	\$558,909	\$188,487	0.56	\$106,307	\$22,419	\$190,000	\$94,247	\$95,753	\$570,775	
APR	2011	\$570,775	\$191,880	0.56	\$108,220	\$27,812	\$260,000	\$128,969	\$131,031	\$621,397	
MAY	2011	\$621,397	\$195,334	0.56	\$110,168	\$33,658	\$260,000	\$128,969	\$131,031	\$675,918	
JUN	2011	\$675,918	\$198,850	0.56	\$112,151	\$24,123	\$272,000	\$134,922	\$137,078	\$724,968	
TOTALS			\$2,177,579			\$277,053	\$186,756	\$84,582	\$82,354	\$992,831	
			FY 2011		FY 2010						
Sales			\$2,177,579		\$1,914,088						
Interest					\$100						
Op'g Stock			\$683,238		\$490,451						
Purchases			\$1,269,884		\$1,272,333					\$2,354,878	\$1,168,104
Closing Stock			\$724,968		\$683,238						49.6%
Other Vble			\$70,145		\$42,084						
Gross Profit			\$879,279	40.4%	\$792,558		41.4%				
Expenses			\$808,001		\$792,027						
Net Profit			\$71,278		\$532						

### Figure 58 - Clothing Store - Spreadsheet Model to Calculate Stock Levels

The transfers between stores are shown in the spreadsheet and then a forecast (blue figures) was made on a rough average deployment from the head office store to the other two stores. Note that the only known stock figures in the spreadsheet were the opening stock values in June 2009 and June 2010 when the owners did a physical stock take. The spreadsheet calculations could be calibrated on these two figures. Sales, Freight and Duty and Net Imports are the only known figures. The rest are derived. (Black figures are actuals and blue are forecasts).

This spreadsheet indicates that even with missing data, it is possible to start the planning process with a reasonable approximation of reality. Without the spreadsheet the IPC Model could not be used at all. The spreadsheet is an approximate model but the figures generated are reasonable. It is better to forecast something that is reasonable than to not forecast at all.

This initiative had the effect of educating the owners about how inventory is handled in an accounting system and how important it is to determine profitability.

In dealing with this difficult case, it was also necessary to prepare a spreadsheet based funds flow statement from the balance sheet for the past year and on a monthly basis to assist the researcher and the owners in understanding exactly what was happening within the company.

The IPC Model does not calculate a funds flow statement. It is interesting to speculate whether it should be included or not. The funds flow statement was certainly helpful for the owners to understand where the money goes and how that is represented in the balance sheet. *[Note that the omission of a funds flow statement in the IPC Model is a deliberate design principle. Refer to Section 4.6.2]*

Figure 59 below shows the past data and forecast for a critical GL account – Trade Creditors. Note the large fluctuations in the past data. A quotation from the field notes is revealing.

*During the discussion I brought up the problem that I was having in dealing with the large fluctuations in Trade Creditors. When I showed Angela the figures, she was concerned. She said that Trade Creditors should never be over \$200,000 and did not believe her own accounts. We went to my computer and looked at the MYOB™*

accounts. She saw the amounts and could not believe them. She went off with the task to find out what happened.

The purpose of this illustration is to show how the treatment of accounting entries without concern for predictions can make the accounts meaningless. The corrective action for the treatment of trade creditors is to possibly amend the way the stock is treated so that the wild fluctuations are eliminated and control is established. The forecast shows the expected trade creditors level looking into the future.

As it turned out the problem was related to the timing of stock receipts. The method to be used to reduce these fluctuations is to manage the timing of entries and possibly handle the stock in transit (that is the cause of the large June 2010 figure) in a separate inventory account. The accounting entries for stock physically received but not paid for were incorrect.

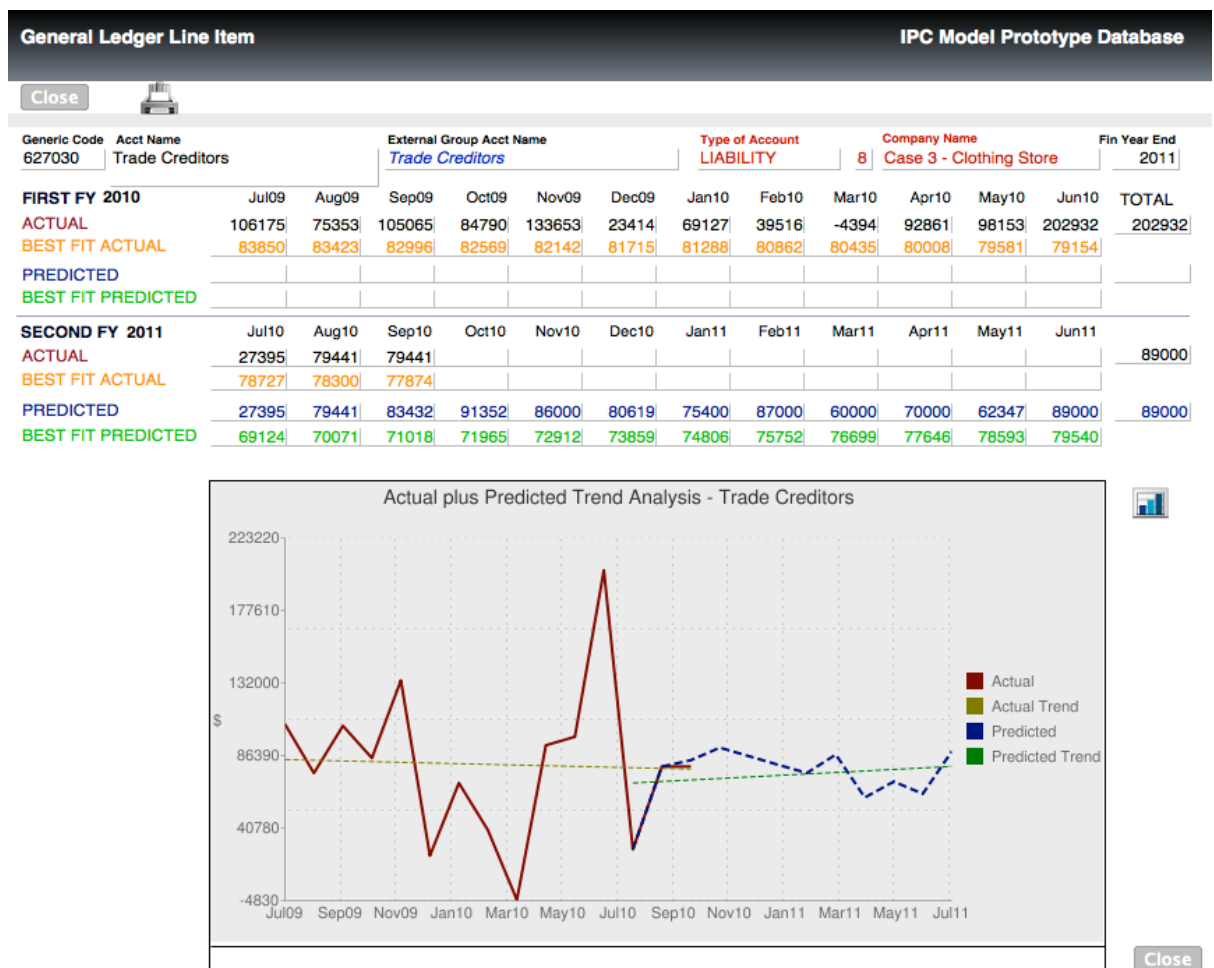


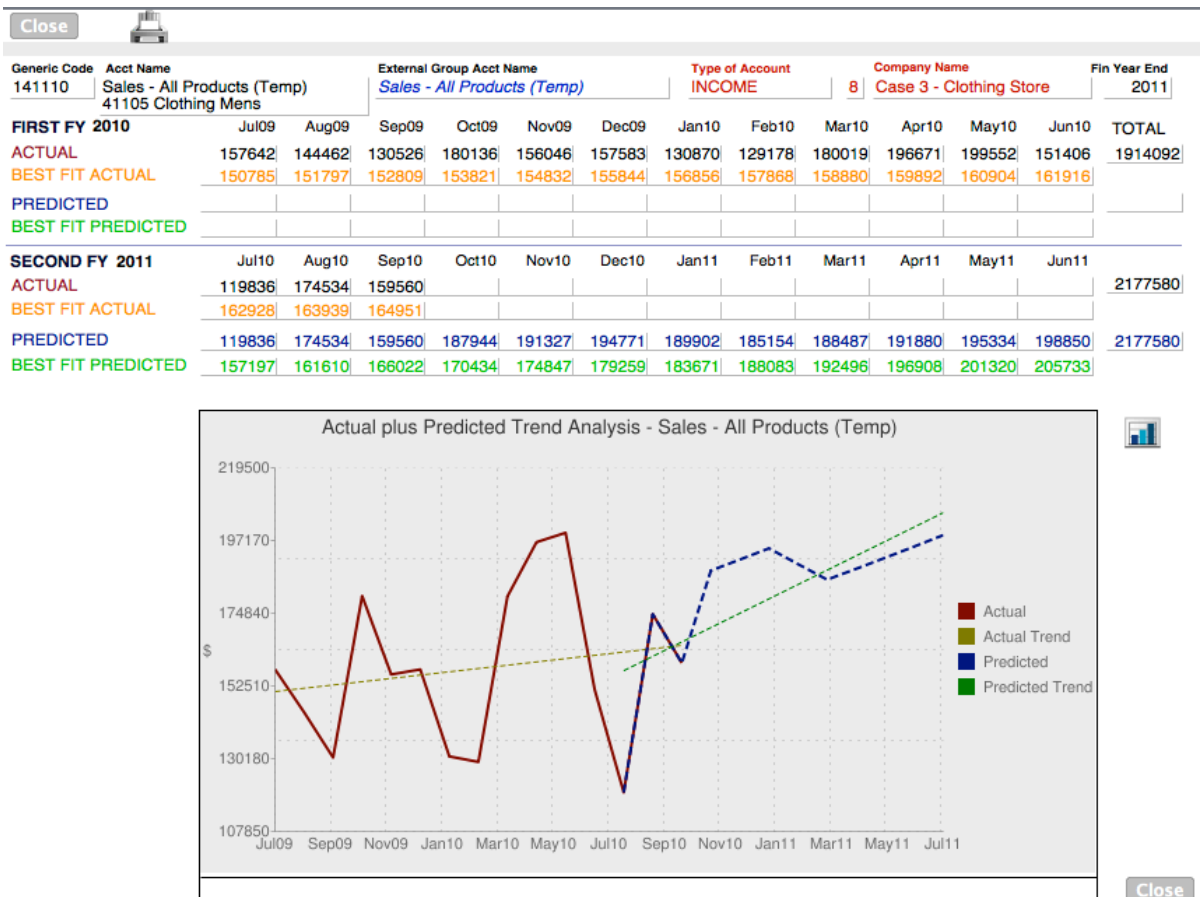
Figure 59 - Clothing Store - Trade Creditors Forecast

The accountant’s role in this case was clearly only to prepare the tax return at the end of the year. Even then the return is not prepared until April or May in the year following the end of financial year in June. It was interesting to note that the stock-take figure for the three stores is aggregated and reported only in the lowest tax paying entity. This accounting treatment is a quite legitimate way to report tax liability when all entities have the same owners.

However, the accounting system as found is a perfect example of the mismatch between the needs for management accounting control and those of the accountant. While it is quite valid from a tax point of view to report stock level in just one entity it is not useful when one wants to measure the performance of the stores separately.

(More detail about the accountant’s scepticism concerning planning and control for the small business is discussed in the analysis Section 6.3.2).

Figure 60 below shows the first sales forecast set by Hugh. What is important to note is the extreme variability of the past sales figures. There are seasonal buying patterns evident in these figures and these could be built in to the forecast more effectively it seems.



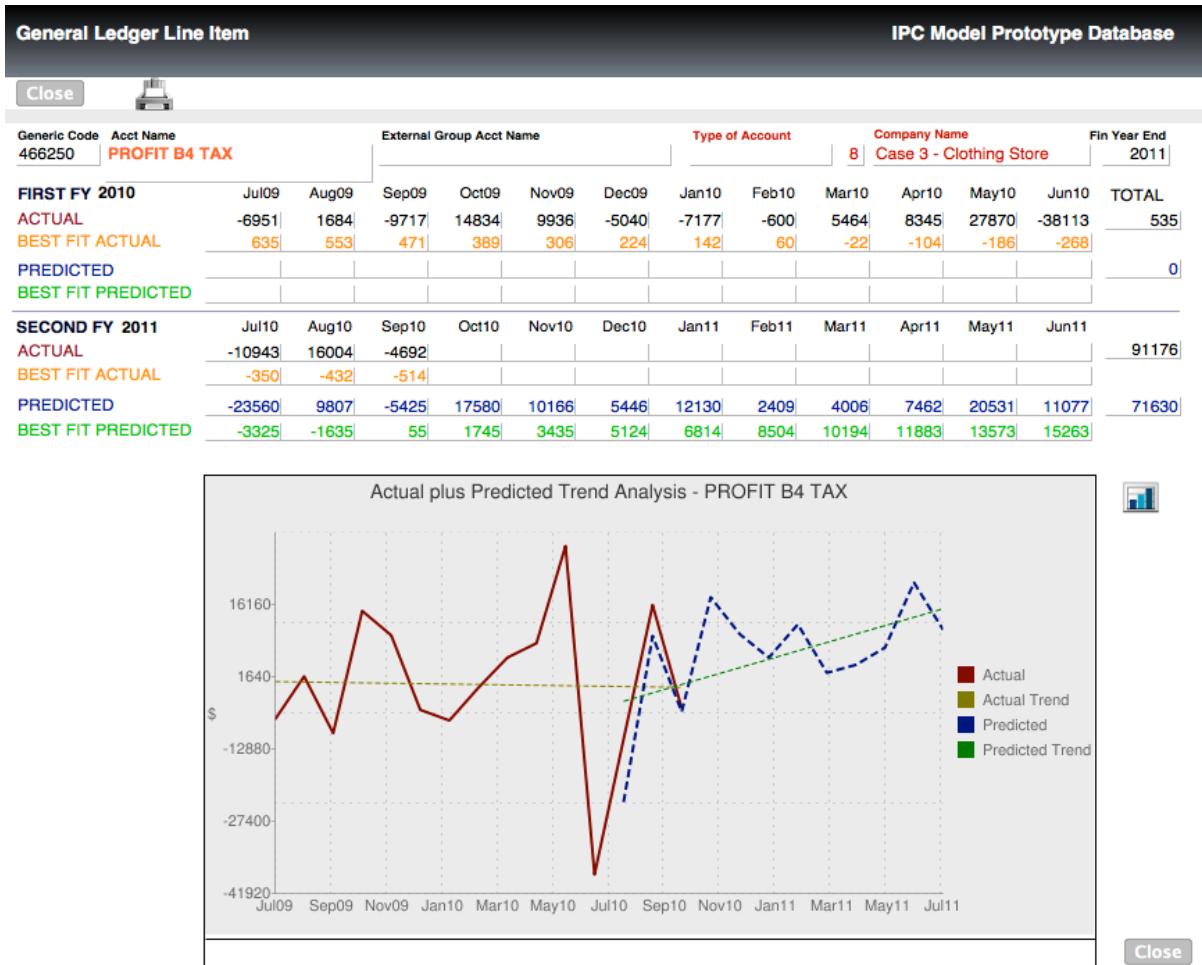


**Figure 60 - Clothing Store - First Sales Forecast**

Later in the study Hugh admitted that he probably had been a little ambitious with his initial sales forecast. Only time will tell whether his predictions were right.

The reason for showing the graph is to ponder on the issue of designing the IPC Model to be an “expert” system. The “expert” system would make predictions based on past data, trends, moving averages and other statistical measures. In the small business context the Clothing Store example argues that the approach is totally unsuitable. Allowing the judgment of the user to be exercised is a far better approach especially when dealing with large volatility in past data.

Figure 61 below shows the resulting forecast for profit before tax. This forecast would not have been possible without the work on estimating the stock levels and then forecasting. The result looks quite reasonable and realistic based on past data. Note that the past data needed the stock level calculations to be entered into the MYOB™ accounting system. Angela made the changes quite readily.



**Figure 61 - Clothing Store - Profit before Tax Forecast**

This case study is an example where the consultant role is influencing the management of the business. The OMs are willing to learn how the accounting system and the IPC Model can help them understand in more detail what is happening financially with their business. Hugh and Angela are keen to make progress and to fully integrate the IPC Model’s MCS into their business. For this company it will require some investment in external consulting, a POS system and the IPC Model. Currently they are interested to continue with the work that was commenced during the research programme.

### 5.4 Building Materials Wholesaler

The fourth case is a company that imports and distributes a series of innovative wood based building materials. When they were contacted in May 2010, the researcher met with the owner (who we will call Margaret) and her bookkeeper (Meagan). The two owners are Margaret and her husband Jim. Meagan is an experienced bookkeeper who has worked with

a sophisticated accounting and planning and control system for a large organisation. She was enthusiastic about the proposed research project and keen to learn new software.

There are five separate entities managed by the owners. Initial examination of the accounts revealed much confusion with complicated contra accounts and unusual items of expenditure to do with two of the entities that were in start-up mode. Meagan suggested that the research program be confined to the wholesale company that was formed about a year ago in April 2009. As she was completing the accounts for end of financial year (2009), the first session did not begin until August 2010. A total of seven sessions took place at their office but there was a total of 10 sessions altogether including researcher deskwork. This involved a total of approximately 26 hours of research effort.

The situation with the entities was that two were start-ups, a retail arm was being sold and the wholesale and retail entities were moving to new premises. Meagan had only joined the company in January 2010 (to straighten things out) and was obviously under a lot of pressure. She was concerned that the previous bookkeeper did not understand the accounts and posted entries inconsistently to the confusion of everyone. Meagan's role included both the bookkeeping function and managing the office. Many times she described the situation in the office as "crazy". More importantly, from the point of view of implementing the IPC Model, this company did not have a stock control system. Meagan had set up a temporary system that she was running on a spreadsheet, a task that took up valuable time.

Evidently Margaret was the one who made the stock ordering decisions and did this by walking around the warehouse and looking at what was on the shelves. As the stock was manufactured overseas, orders needed to be placed in large shipments with lead times of many months. During the seven sessions, Meagan was able to do the Mapping Scheme where an accounts list was reduced from 335 to 205 line items. She completed the business model quickly (20 mins) and forecast a few product lines. As of mid October, she had defaulted on three planned meetings in a row and then could not be contacted by phone ('gone for the day') and did not answer emails. She was unable to produce a clean set of accounts for July to September 2010 for input to the IPC Model. The case was halted at this point.

The learning from this situation is twofold. The IPC Model cannot be of assistance if there is no past understandable accounting data. Secondly, one wonders if an employee has the

same motivation to apply the effort needed to implement a formal and somewhat demanding planning and control function. Especially the planning that requires the user to be familiar with the company accounts, but more importantly, to be the person in a position to formulate strategy. There is no point in simply forecasting extrapolations of past data, which is what appeared to be happening when Meagan did the few sales forecasts.

Note also that in this case, neither of the two owners was interested in the accounts. They have employed a team of accountants to “deal with it”. This situation contrasts greatly with the Clothing Stores case where the owners are determined to improve and patiently make progress in a steady fashion.

## **5.5 Computer Stores**

Matt is one of the owners of a set of three stores that sell, install and service computers and run software training courses. His background is as a chartered accountant having completed a commerce degree and an MBA degree by thesis in South Africa. He also has had some experience in programming computers in the early years of his career. He is highly computer literate and moved quickly in working with the new software. He was the Chief Accountant for a timber company for 12 years before deciding to take a share holding in the computer company. He is thoroughly conversant with the concepts behind the IPC Model and its function.

There have been six sessions with Matt with the total contact time being approximately 18 hours. Whilst the interviews contained some quite vigorous discussion about management accounting practice and the initially perceived function of the IPC Model, Matt was generally pleased with the software and was convinced that it could assist him with the management control of all of his stores. He has decided to adopt the software. He can see an opportunity for his stores to market the product in the future.

Matt was supplied with a runtime version of the program with accounts set up for all of his stores. However, it was decided to deal with one store only for the research programme. He used the runtime version on his laptop, which allowed him to work on the forecasting whilst he was travelling.

The study store commenced operations in October 2009. Note that the stores all use a leading edge POS system that provides excellent sales statistics and accurate on-line stock

status for all stores. In only two sessions that began in November 2010, Matt had completed his Mapping Scheme and imported all past data for the previous 12 months.

We then imported the data into the IPC Model. All the data came in without error! The whole process from Mapping to import of all data took just 45 mins. After a one week business trip, he came back with the profit and loss forecasting completed. This was without any training.

The learning from this case is that if the accounting system is in order and the user has accounting knowledge, then the IPC Model can be implemented relatively easily.

Some interesting observations during the sessions are noted in what follows. More detailed observations are drawn from this case in the analysis section of the thesis, Chapter 6.

During the preparation of the Mapping Scheme, the Generic Chart of Accounts proved not as generic as it might be. It was necessary to add in seven new accounts to the Generic chart. These were Goodwill, Preliminary Expenses, Other Creditors, Customer Deposits and three general accounts for Commissions Paid on Sales. In this case Matt uses two creditors accounts. 'Trade creditors' is for his stock purchases from a few key suppliers and 'other creditors' is used for suppliers of other goods and services that constitute general expenses.

The question to ask is whether the 'Generic COA' can be generic for all companies or whether the program should allow for some customisation. If so, how is this achieved without jeopardizing the function of the Generic COA, which enables the program to carry out various functions based on knowing which accounts are being addressed? This question cannot be answered without having experience with a larger number of test sites.

When it came to forecasting the Balance Sheet, Matt had some strong preconceptions of how it should be done. This observation is discussed in some detail in Section 6.1.1. An extract from the field notes for this case reveals the conundrum:

*The next step was to start forecasting the Balance Sheet. I am not sure that Matt was quite clear about how we do this part of the predictions. We discussed Accounts Receivable and Accounts Payable a lot. He was inclined to approach the problem of forecasting these items in a much more complicated way than the program does.*

*Anyway, in the end, I was able to show him how we would do (say) Accounts Payable (Trade Creditors). In this business, the trade creditors are linked to purchases, which in turn end up with the inventory value. In fact, by looking at past data it seemed that trade creditors were about 90% of inventory. So we looked at both graphs, that of inventory along side that of trade creditors and there did indeed seem to be a relationship. So we used method 1 to enter an inventory figure with a manual application of a seasonal variation and then we used method 17 to derive the trade creditors as 90% of inventory value. Thus those two GL Line Items were completed.*

Matt was not inclined to do the business model. Given his limited time availability, he felt that getting his other stores up and running was more important. Working on the business model requires a reflective mindset and in Matt's case, it was apparent that their business model was set and not in need of change.

The following field notes give a typical snap shot view of a normal monthly (or in this case two monthly) cycle:

*In this session we input the January and February 2011 data from MYOB™. After the several weeks since our last meeting Matt was a bit hesitant with the software and needed some prompting but he gathered pace and operated it efficiently towards the end of the session. One of the Excel™ files exported from MYOB™ was corrupted and we had to do the process again. There was a new account 'Commission No. 3' that had to be entered into the Mapping Scheme. This was not a problem but "we" forgot to go back to the newly input data and invoke the simplification process. There needs to be a prompt in the program after adding a new account to the Mapping Scheme to remind the user what is the next step.*

This small hiccup is an example showing how improvements to the IPC Model arise out of user observation. It also shows how a user can feel uncertain with the software after not using it for several months.

The next field note is another example of a desirable change to the program that arises from user observation and experience with differing data sets.

*He looked at sales and gross margin. We discussed the fact that past prediction data did not exist before October 2010. Some of the graphs from the Financial Reports had their scaling influenced by the lack of early prediction data. We went to the prediction table*

and put in predictions equal approximately to known past data so that the graph automatic scaling was more appropriate to current data. This was noted as a future program option that should be included.

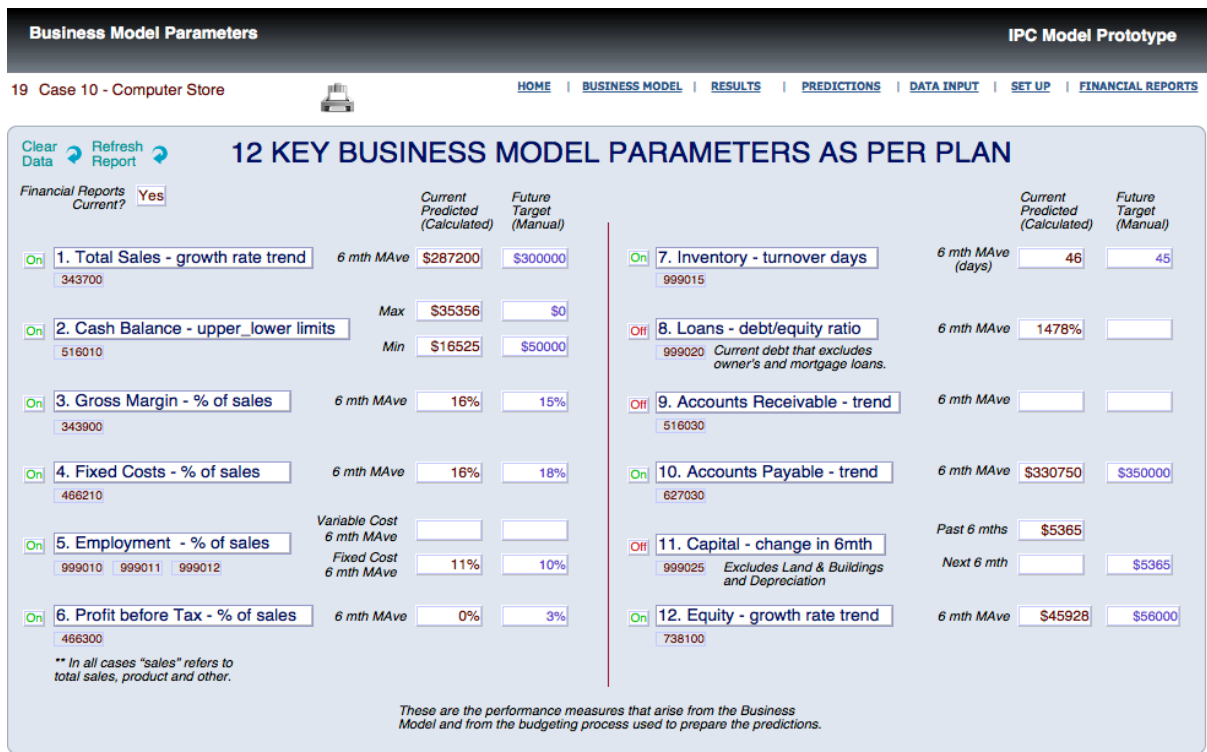


Figure 62 - Computer Store – 12 Key Business Model Parameters as per Plan

Although Matt did not complete the business model, he did set targets for nine of the possible twelve performance factors. Figure 62 above shows the targets set and the 6 monthly moving averages of the predictions both of which are used in assessing the results when new actual data is imported each month.

Figure 63 below shows the results that include actual data to February 2011. That means there is actual data for 17 months and predictions for seven months.



Figure 63 - Computer Store - Results of the 12 Key Performance Factors

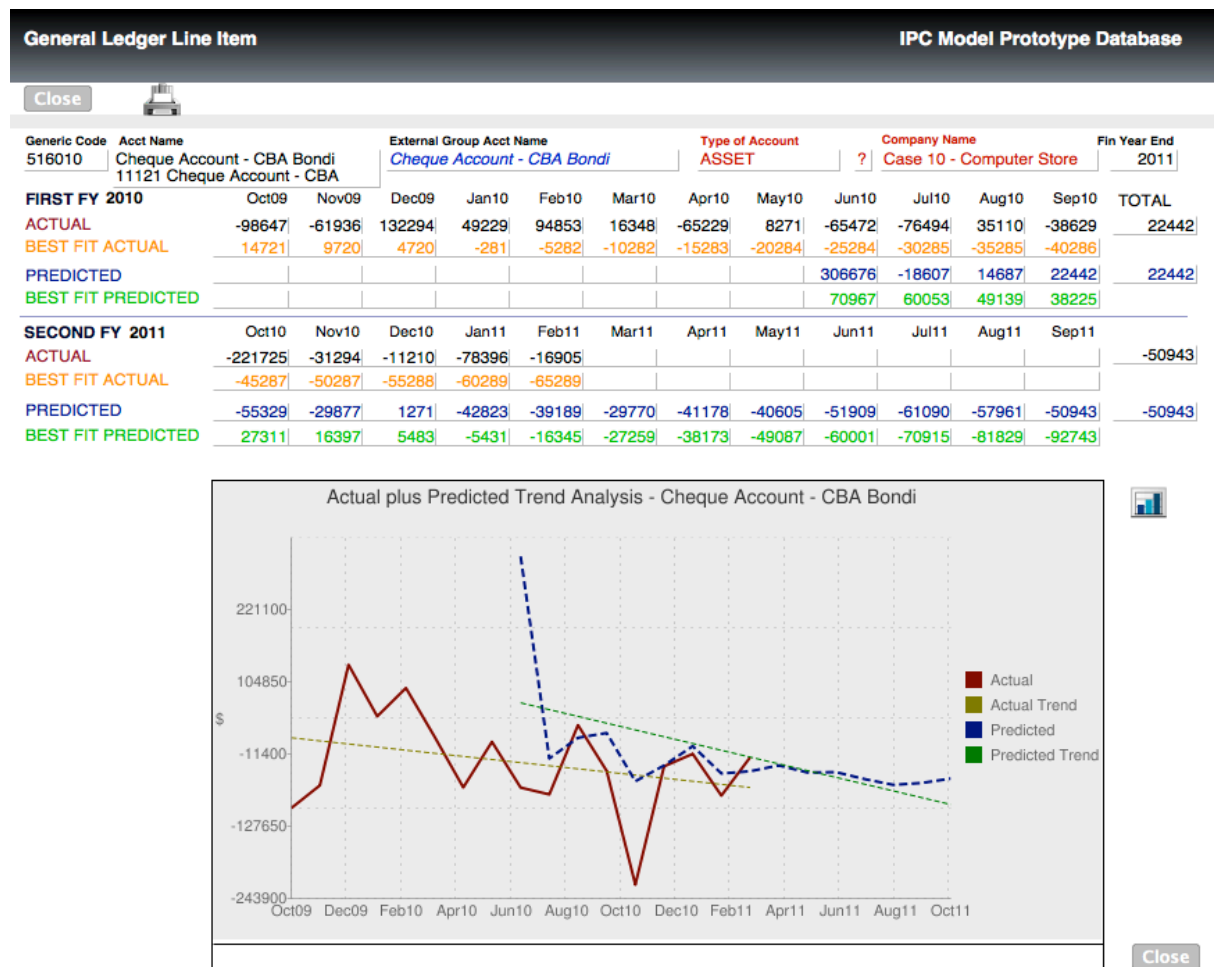
Matt was intensely interested in the performance results. He was most interested to see the Inventory Turnover figures. They were a bit higher than he expected being between 50 and 60 days. He wants it to be as low as 30 days (even though last time he set a target figure of 45 days). He was also interested in Accounts Payable along side his inventory turnover. These measures had not been previously monitored.

Figure 64 shows the actual cash flow compared to predicted. This was one of the items that the program highlighted (Item 2 in the Results section – Figure 63) as requiring review. The score was low due to the large and negative fluctuations in the past data. The predicted data is realistic. Further investigation revealed that the large fluctuations in actual data are due to loans or stock movements between the test case store and the head office store. These large amounts should have been recorded as contra loan accounts in the two stores.

There is further discussion about branch accounting in Chapter 6. As a result of the three cycles of data input that occurred in this case, it became clear that Matt could improve the way he has designed the accounts for each of the stores. Improvements could be made to give a clearer picture of the profitability of each store. The adjustments involve the Balance



Sheet. There needs to be an improved system for recording stock transfers and cash transfers between stores.



**Figure 64 - Computer Store - Cash Flow Forecast vs Branch Accounting**

Matt talked about changing the way that he deals with this in his MYOB™ accounts so that the cash balance in each store is realistic and reflects how the store is performing. He intends to make the change in the accounts for the other stores as well. That change should reduce the occasional large fluctuation in the cash. Overall though the cash prediction was at least close to actual.

Figure 65 below shows a graph of sales forecasting against the actual results. y There is a greater volatility in the actual sales results than predicted. The reason for the large increase in sales in the period July to December 2010 was due to a new product that was introduced during that time. The sales were much greater than predicted. Matt did not want to modify his predictions as he knew that the better than average sales figures were unusual.

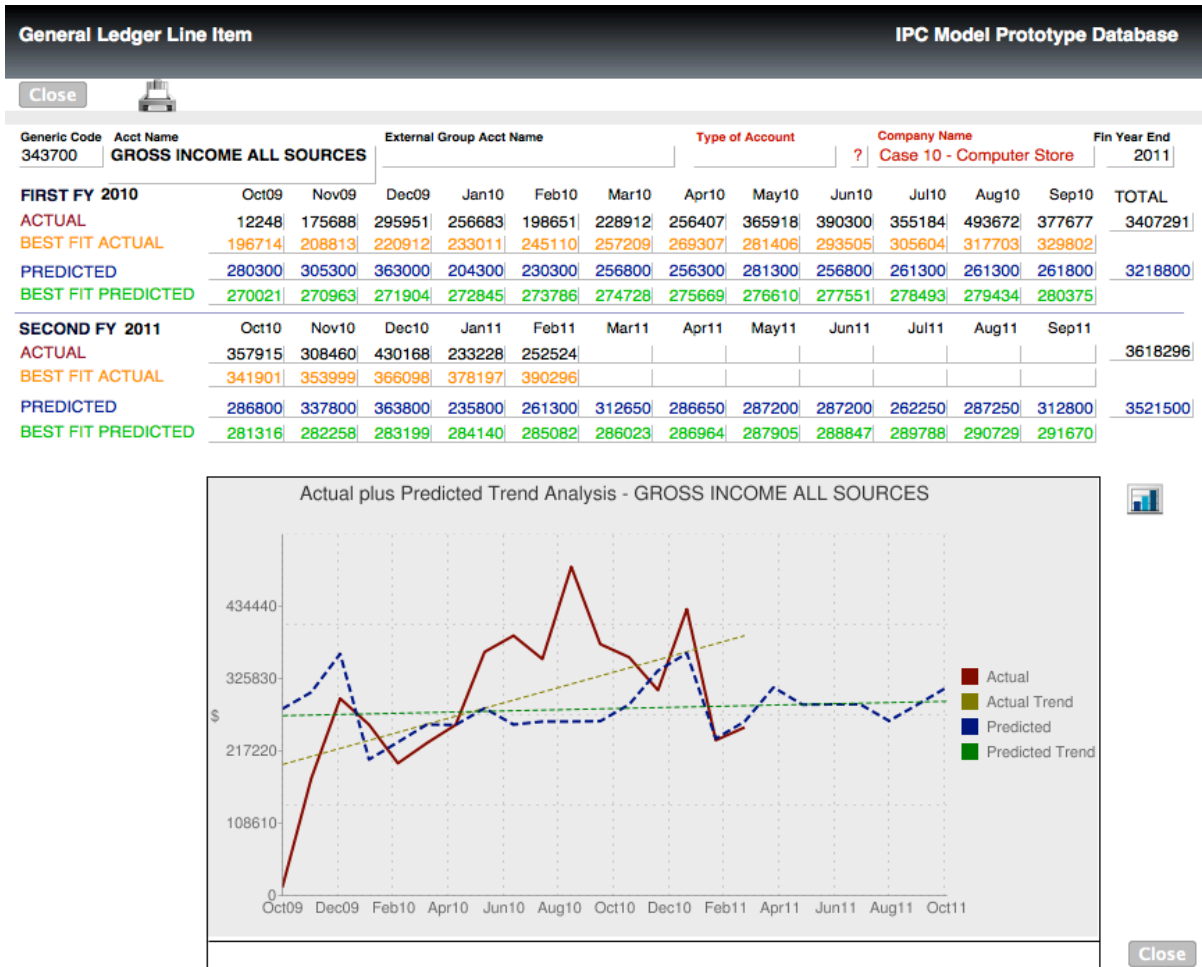


Figure 65 - Computer Store - Sales Forecasting

From experience, Matt’s sales forecasting accuracy will improve when he has been through a few more monthly cycles. Matt has had large breaks of two or three months between reviews, which is not good practice when the desire is to improve forecasting ability and to increase control of the business.

In this case it has been possible to show that the IPC Model can be implemented quickly and be most effective in encouraging improved management control. It has been such a pleasure to work with a person who understands budgeting and accounts, has an excellently managed accounting system and is computer literate.

### 5.6 Case Studies Summary

All the OM’s in the case studies were initially enthusiastic about the concept of improving their MCSs. They were keen to learn how to work with the IPC Model and generally were pleased with its functionality and look and feel.

The implementation process, involving the researcher introducing the IPC Model, and the setup process conducted in sessions of up to three hours per session was effective. Each session was usually conducted with the participants sitting at the researcher's computer and operating IPC Model. The session was recorded. The researcher would observe how the participant was using the software and would take notes of the participant's reactions.

Throughout the research programme the IPC Model performed largely as expected with only minor alterations needed after a session. By the time that a particular step in the implementation process was being conducted the IPC Model operation was fully tested and suitable to use by the participants. This was because the case studies did not begin until after the IPC Model had been mostly built and desk tested. This preparation allowed the researcher to concentrate on the participant's reaction to the software and the effect that it was having on them and their business that turned out to be an important part of theory development.

As the implementation process proceeded, the need for the OMs to understand basic accounting became apparent. The IPC Model helped OMs to increase their knowledge with respect to the specific accounting within their own business.

Working through the planning process generally went smoothly. The OMs were quite keen to discuss their business goals and objectives and the rationale for planning decisions with the researcher. The researcher played two roles. One was that of observer in a research sense and the other was that of a coach encouraging the OM's learning process.

After a session the researcher entered the data evaluation phase. The first was consideration of the case's business status and progress with the planning and control function. There the participant had to provide further data or had to think about their strategies or tactics, the researcher discussed such action with them to be prepared for the next session. The second was the evaluation of the performance of the IPC Model and whether it was performing according to the design principles set in Chapter 4. Many times there researcher made a list of improvements that could be made to the software either during the session or afterwards using a day book. Following the session, changes were made to the IPC Model software if necessary. This was the diagnosing phase.

After that the changes made to the software were tested using the case study's data and action planning for the next session was made. The AR cycle (Figure 9) was played out via

the sessions. After each session (*the action*) the research results were evaluated (*evaluation*), the learning from the sessions was documented (*learning*), the IPC Model's functionality was assessed (*diagnosing*) and where necessary was improved. After that the *action planning* for the next session was carried out.

The analysis of the qualitative data collected was not commenced until after all the cases sessions had been completed. The point of completion was influenced by a judgement that further investigation would not reveal any new insights that would influence the process of answering the research questions.

Thus the next chapter, Chapter 6, details the analysis of the data gathered in the cases and gives a description of how a theory that is grounded in the data was developed.

## **Chapter 6 Analysis of Qualitative Data**

The purpose of the research is to determine whether the application of the IPC Model, designed as a software based MCS for small business, was effective in improving the case study companies' planning and control functions.

From the regular working sessions with the case study participants a set of 30 source documents were produced. These consisted of transcriptions of working sessions, emails and the researcher's field notes and memos ('sources') These data were analysed using the software tool NVivo™ 8 (QSR International Pty Ltd 2007) which was used as described in Section 3.4

(For clarity, note that the term 'references' – previously defined in Section 3.4 - refers to the sub-concepts. These are pieces of text, phrases or paragraphs or quotations that have been coded in NVivo™ into a 'free node'. )

This chapter will define and illustrate from the data, the themes and concepts arising from the research – the aim being to develop a theory that aids in understanding the field experience and to assess whether the research question can be answered.

The research question directs the analysis of the data collected. The presumption, which is backed by empirical evidence discussed earlier, is that improvement in planning leads to better control (provided a feedback mechanism exists), which together are expected to lead to desired outcomes for the business. "Desired outcomes" are those perceived by the OM and do not necessary imply simply growth and profitability. The rationale for running a small business is often more complex as is described in Chapter 2 where the Small Business Success Model was developed (Section 2.1.4).

Clearly a satisfactory outcome is defined in terms of the business at least being solvent (essential) and that the goals set by the OM are achieved. It also may mean that the user is satisfied with the software tool as an aid to thinking about the business, assisting with planning and control and measuring performance compared to define goals. Such concepts are necessarily qualitative. The analysis technique adopted collects a series of comments across the five case studies and looks for concepts that support or refute the premise that the tool provides desired outcomes for the OM.

The research is primarily about designing and developing a prototype version of the IPC Model software followed by testing proof-of-concept in five case studies. As the software is prototype, it was never expected that the cases would necessarily adopt the software as part of their management processes. The fact that two companies valued the software sufficiently to adopt was a surprise for the researcher. From this experience it was possible to observe the factors that contributed to adoption and to draw inference about other factors that discouraged adoption.

**Three key concepts (themes)** arise from the research aims. These are:

1. Efficacy of the Software – User’s Perception;
2. Impact on the OM’s Management Control Mindset; and
3. Factors Affecting Adoption.

Within each theme up to four main concepts were identified from the data. Within each concept, several sub-concepts arose. (There were a total of 53 sub-concepts developed during the analysis.)

Each theme and associated concepts will be discussed separately in what follows. Quotations from the participants and extracts from the researcher’s field notes will serve to illustrate the concepts developed.

Sections 6.1 to 6.3 relate to the user’s experience in implementing the MCS process inherent in the IPC Model. Section 6.4 provides a summary of the experience with the software itself apart from the process.

## **6.1 Efficacy of the Software – User’s Perception**

The first theme arises from the need to determine from the user whether in their view, the software facilitates the effective implementation of a disciplined process for planning and control in their business.

A second aspect in assessing the efficacy of the software is to determine how it interfaces with the other ISs within the business with particular emphasis on the accounting system.

A third aspect is that the software produces outputs such as the business model, performance measurement, forward looking Financial Reports and visualisations of the businesses’ health

that are in a format acceptable to the OM, the Board (or management team) and external parties.

The user's reactions to the software resulted in three basic concepts arising from the data. These are:

- Accounting preconceptions;
- Software usability; and
- Software improvement perceptions.

### **6.1.1 Accounting Preconceptions**

This concept refers to several observations concerning users perceptions about planning and the role of the accounting system. The preconceptions observed are those that the Case participants had and were discussed prior to or during introduction to the IPC Model.

They give an insight to initial status of OM thinking, which later can be compared with their comments and actions after introduction to the IPC Model. The purpose to this discussion is to provide evidence of a change in the OM mindset during the study.

Each of seven key observations is discussed separately. The distribution of references for this concept is shown in Figure 66 below. The discussion follows the order from most to least references.

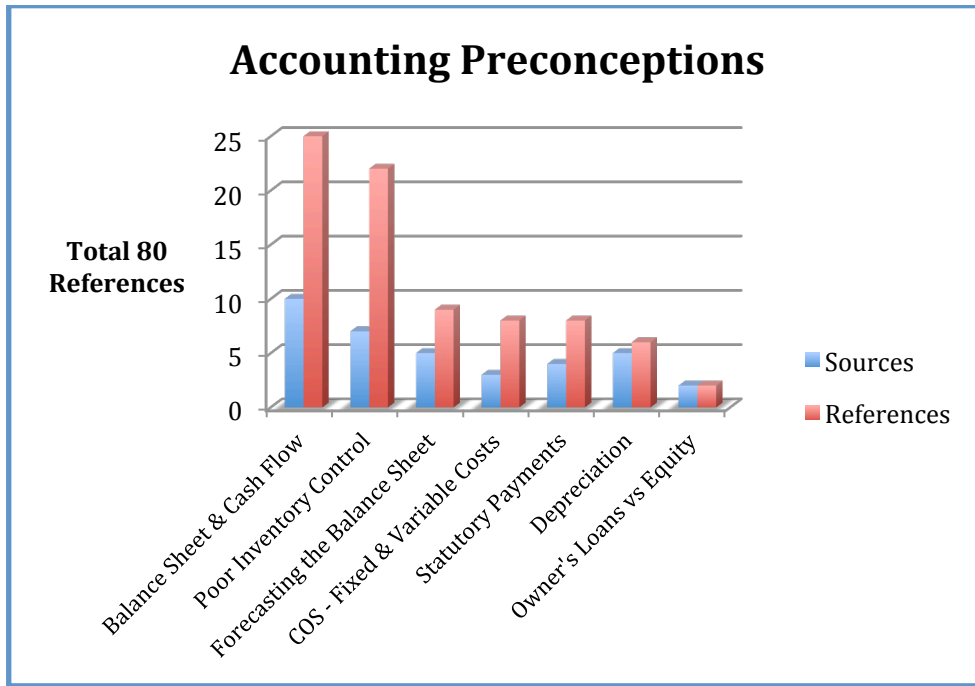


Figure 66 - Accounting Preconceptions

**6.1.1.1 Balance Sheet and Cash Flow**

The most common observation was that users equated planning with only preparing the Profit and Loss forecast and some capital items. None of them felt comfortable with forecasting the Balance Sheet nor did they initially realise the significance of Balance Sheet forward projections. They did not have the understanding that the month-by-month cash flow forecast is most accurately derived within the Balance Sheet provided the whole of the Balance Sheet GL Line Items are projected.

The so-called attention to “cash flow” usually meant that the business was working on rough profit and loss projections or a breakeven analysis or simply meant that a spreadsheet containing known payments and receipts was maintained in order to keep the main bank account in order. There was not the understanding initially that whilst some items in the Balance Sheet remain relatively constant month-by-month, every item needs a projection for the cash flow forecast to be accurate.

There were even instances of managing “by feel” without making use of data within the accounting system which very often was out of date or inaccurate.

The following quotations from both transcriptions and field notes clearly show the OM’s concern about cash flow in their businesses but that their methods of predicting the cash were deficient.



Field notes regarding the Dog Day Care Centre:

*At the time when the case commenced, Bill was working in the business. He was at the centre from 7am until 7pm at night. He commented that he runs the three businesses as one – on a cash only basis. At the time, the third outlet had not quite begun operations. There are no accounts receivable and very few accounts payable. Bill said that he never looks at the Balance Sheet. He said that a bookkeeper in Perth does their accounting. Even at this early stage, I noted that possibly Bill may not be all that comfortable with accounting matters.*

Bruce from the Fitness Studio was struggling with spreadsheet versions of his cash position. He was trying to forecast but he was aware of the imperfections of his system. However, it was all he had and the quotation certainly illustrates how important cash flow was to this struggling start up business.

*I note your points about 'simplicity and usability'. Personally I have found that particularly in our first 3 start up years my cash flow charts are king because they are real-time. P&Ls and Balance Sheets are compliance based whereas cash flow charts are all about control. I know this is not entirely correct but it seems this way when you are running at a loss. Even as we have become consistently profitable I remain in love with my cash flow chart.*

The Computer Store user had a preconceived notion of how the program should operate before he had completed his forecasts. Being a chartered accountant he was quite experienced at producing spreadsheet budgets and had a fixed view about how budgets should be constructed.

*There is no doubt that the model ideally is integrated cash flow, profit and loss, balance sheet. And there is some work to be done on integrating that. Because really at the end of the day your balance sheet should almost drop out 90% from your P&L account.*

Field notes at the time record:

*I suspect that before we began this part of the exercise, Matt was a bit skeptical about the validity of my “calculate the cash at the end” method. My approach is definitely not the classical accounting method. Accountants think in terms of each line item needing an opposite entry at the point when one does a prediction. They*

*feel uncomfortable with the idea of doing one-sided forecasting and then calculating the cash at the end. For a mathematician this is the natural way to approach the problem but people who come through the accounting education process simply do not think like mathematicians. This interesting phenomenon will come out in more detail from the transcriptions.*

This user imagined that the IPC Model would use the methods that are adopted in Budget Maestro for example, where the user produces the P&L Accounts and then the program calculates the Balance Sheet from that. The IPC Model adopts a different method where each GL Line Item is considered separately but that there are automatic calculations within the methods. For example, the GST is calculated based on both Balance Sheet and P&L forecasts and takes into account the statutory payment schedules each quarter.

The points made by the Computer Store user were addressed in the design section of the thesis (Section 4.6.2). What is interesting about his comments at the time was that he had yet to realise that there is no need for a separate cash flow statement in the IPC Model. The Cash calculation is the “balancing item” and shows the end result of individual and sometimes linked predictions of each GL Line item in the financial reports.

The IPC Model allows for more flexibility than this user’s standard accounting method. For example, the inventory level in the Balance Sheet may be linked to cost of sales in the P&L account, which in turn is linked to sales via the gross margin.

The transcription clearly illustrates the OM’s accounting preconceptions.

Now we cannot do the rest of them because we have not done the Balance Sheet.

*Why would we not have done the Balance Sheet? We have put in the original Balance Sheet haven’t we?*

Yes, but this is forecast.

*But doesn’t it ... from your forecast ... create a Balance Sheet?*

Oh no. We have to do the Balance Sheet.

*But, how do you know all the movements with the cash coming in an out? It is part of the model – because that is a very crucial part? The Balance Sheet and the Cash Flow.*

And the transcription shows a graphic realisation that changes his view when in fact the Cash GL Line Item is calculated for the first time.

*...want that figure to show around about \$100,000. It can be \$80,000.*

It's going to be lower. [wait] It's \$8000. Are you happy with that?

*I'm not. And I will tell you why ... think of it this way. Everything is on a cash basis, breakeven so that there is no cash generated. Oh wait a minute... I know what, we have reduced stock by \$100,000 so that generates cash but I have reduced creditors. I bet creditors has come down ...*

Yes, go and have a look.

*Creditors. Hmn.. my trade creditors have gone from \$400,000 to \$315,000. That's why. My mind was thinking that we have brought down the stock but we have also reduced the liabilities. Yes, I am happy with the model! It does work! It does work!*

### 6.1.1.2 Poor Inventory Control

In the Clothing Store case the field notes clearly state the problem.

*On examining the MYOB™ accounts, it was apparent that not much use could be being made of the data being recorded. The outstanding deficiency was that there is no stock control system in place. The accounts do not make sense. For example, the stock count figure that was included as a result of the annual stock-take has been entered into the accounts of the smallest shop when that shop does not do the purchasing. (In session 2, it was revealed that the stock figure in the accounts was an "old" one! It has been in the accounts for years! In this case one wonders where the opposite entry is and is evidence that the Balance Sheet is not referred to by the owners – possibly through lack of understanding of its value.)*

In the Building Material Wholesaler's case, the transcription from an early meeting shows the bookkeeper's frustration associated with the lack of importance placed on inventory control. This came about because the owners had a profit and loss focus and basically ignored the Balance Sheet.

*[Bookkeeper - Meagan] So that is a really, really important thing because we found with the accounting, because such a high use of stock – in and out – no one can ever keep a track of it. It has just been a nightmare. So at the moment, I have just created about 20 mini spreadsheets. And I have just put the stock in there and I am*

*just controlling that and I have been [doing it] for the last three weeks. I am just going – in, out – that is it. Just so we actually know what is coming in and out. So that is something that will be really, really important and part of this stuff. Because we need to know and we just don't. We guess.*

The bookkeeper confirmed the accounting preconceptions of the owners.

*Really strictly, <Margaret> and <Jim> – all that they are interested in is “have we made a profit?”. They are not really interested in how it got there. They are not interested in the accounts or how we have spread everything out or how we have allocated the accounts.*

### **6.1.1.3 Forecasting the Balance Sheet**

Extracts from field notes explain the problem. This is an example of the preconception that paying attention to the Balance Sheet is of secondary importance. In the case of the Fitness Studio, Bruce was not aware that he had been over paying his debt with the ATO. (See Section 5.1.5).

*Phone call from Bruce. He is keen about updating his predictions. The earlier figures from the IPC Model made him question the loan repayment schedule to the ATO. He rang them and found out that there was a corrective letter and he had been paying more than he had to by \$60,000. He is actually happy about this mistake because he wants to use the IPC Model to see if he can now pay off his tax department debt by December.*

### **6.1.1.4 Cost of Sales (COS) – Fixed and Variable Costs**

Understanding the importance of the Cost of Sales (COS) with the associated distinction between fixed and variable costs was lacking in a number of cases.

In the case of the Computer Store, even though nearly all of their labour cost was variable (sales staff), they preferred to record it as a fixed cost. The user changed his view later when it became apparent that via the mapping, it was relatively easy to distinguish between fixed and variable costs. The preconceptions are shown in the following dialogue.

*So in MYOB™ we do not use labour (as COS). Labour is all below the line. Fixed and variable – we will go through that, because there are certain variable parts to that. Commission is variable? It is mostly fixed.*

In the case of the Fitness Studio, they had not considered the value of assigning labour costs to fixed and variable categories. After exposure to the IPC Model, Bruce changed his policy.

#### **6.1.1.5 Statutory Payments – GST, PAYG and Superannuation.**

By not accurately forecasting the Balance Sheet, some cases failed to effectively control the statutory payments of GST, PAYG and Superannuation.

The Computer Store was not really treating their branch store (the test case store) as a stand-alone entity. Balance Sheet treatments of PAYG Withholding and GST were not accounted for in a manner that accurately represented the new store's performance from both the profit and capital points of view. The accounting misconception is that the Balance Sheet was not important and that these anomalies could be corrected with annual journal entries to the loan account between the test store and the head office store. This treatment does not allow accurate forecasting of cash flow nor does it represent the indebtedness of the new store to the head office store. Extracts from an email to the user highlight the problem.

*I guess that what you are doing here is paying the PAYG Withholding from the main company and letting the balance build up in the branch until the end of June when it is moved over to the main company via the loan account.*

*There are problems with this. Firstly the forecast needs to be corrected to show what you are doing. Secondly, you are really not running the branch as a stand-alone enterprise and I think that is what you want to do. If you pay the amount over to the main branch each month, then your indebtedness to the head office is more accurately known.*

#### **6.1.1.6 Depreciation**

Another preconception was not realizing the importance of accounting for depreciation on a monthly basis.

In the following dialogue, the researcher explains that Bruce (Fitness Studio) should be allowing for depreciation each month.

*You are kidding yourself that you are making a profit if you are not doing the depreciation. Well, this last year, we thought that we had made a \$90,000 profit. Well I knew we hadn't. But the MYOB™ was showing that we had made this profit.*

*But when all the depreciation and all the other adjustments that were added in by the accountant, there was a \$50,000 profit. I think that we were just so excited to make any profit. But it ... I am keen that we are getting a much more accurate figure during the year and I was actually looking at introducing monthly depreciation.*

#### **6.1.1.7 Owner's Loans vs Equity**

Not being aware of the distinction between owner's loans and owner's equity was a preconception for two of the cases, the Fitness Studio and the Clothing Store.

Funds contributed to the business by owners were shown as loans but such a representation caused the Balance Sheet to show negative equity. Theoretically this treatment says that the entity is insolvent when in fact it is not. Some of the owner's loans should be shown as equity and the owners should be made aware of the extent of their contribution that is not recoverable in the event of the business liquidating.

#### **6.1.2 Software Usability**

This concept refers to a user's reaction to the software interface. For example, how easy it is to navigate between sections of the program and the ease with which it is possible to carry out the functions within the program. Each significant usability aspect (sub-concept) that arose in the data is shown in Figure 67 below. The sub-concepts are shown in descending order of importance and are discussed with examples of user comments that support the observations.

It is important to distinguish between the basic functionality of the software and the planning and control process embedded in the software. There was never a question of the software not functioning as designed. The discussion that follows concerns how the case study participants are making use of the inbuilt MCS.

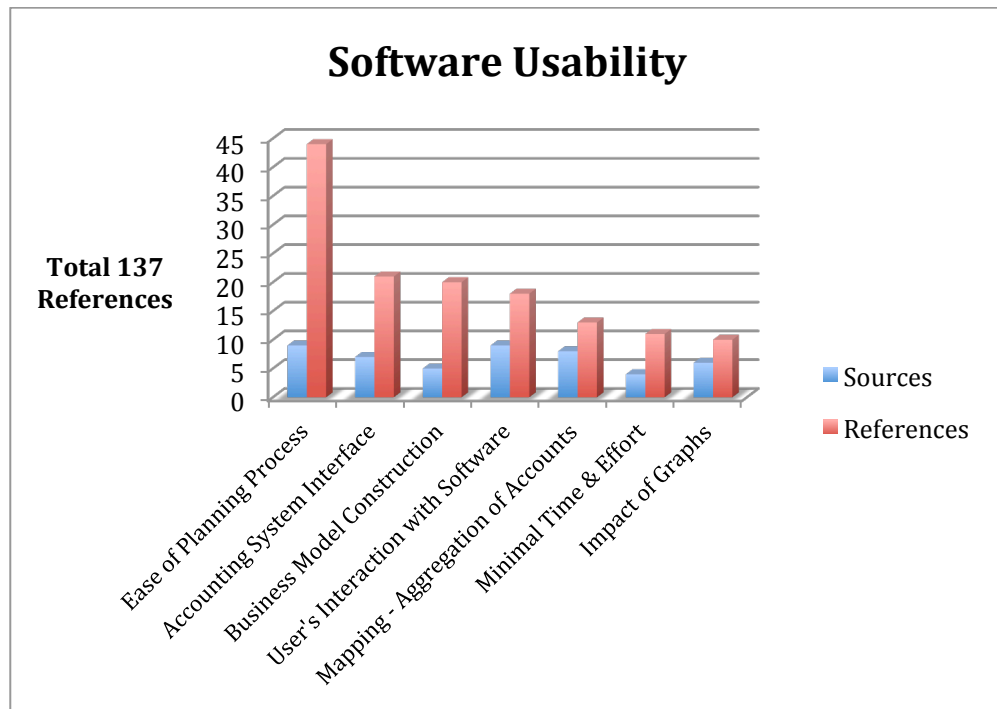


Figure 67 - Software Usability

### 6.1.2.1 Ease of Planning Process

The field notes record that all three of the cases where the software was implemented in full, became quite adept at doing the predictions. They generally followed the inbuilt monthly process of bringing in actual data for comparison with the predictions. It is not possible to know if the case study users would carry out the process without the prompting from a business coach or consultant or in this study, the researcher.

The quotations for this section are quite detailed referring to specific forecasting considerations for the particular company. Only a few selected quotations and field notes are included here to indicate how users react to different aspects of the program.

In the predictions section, initially users needed some help in selecting the appropriate Method. They also sometimes needed prompting to use the graphs after making the prediction. The notes recorded for Clothing Store show this.

*In each case, the projection was checked with the graph to see that it looked sensible. In one case, <Angela> had inadvertently entered the prediction against the wrong GL Line Item and when the graph was produced the mistake was obvious. <Angela> needed to be reminded a few times that checking the graph was a good idea but in the end, she was getting quite used to the procedure.*

The Fitness Studio user liked using the memo field to record the thinking behind the prediction.

*The process of forecasting the balance sheet was much slower than I expected. <Bruce> and I stopped to discuss each line item in some detail. He sometimes would press the wrong button and we would have to do it again but the program did not crash. The experience was quite acceptable.*

By dealing with each GL Line one at a time, the notes and transcriptions show how the user is thinking about their business. They tend not to think about the software. It acts simply as a tool to aid the thinking process and is not an issue in itself. The flexibility offered was appreciated as is shown in this quote.

*I like the choices of the ways of forecasting. You can do a predictive, fixed figure. This is a fixed cost and I know my rent is fixed for the next year so that I can put that in as a fixed cost. I can put it in as a variable and it gives me a chance to put in a percentage or whatever else ... so I like the range of them. There is probably more range than I personally need than the ones that I have done so far – I tend to use only 3 of them (there are about 9 altogether) – [actually there are 17] – but that is the type of business that I am in. If I were manufacturing and had stock and all that sort of thing, I would probably be using other ones but it is good to have a choice. I also like the fact that you can go in and alter a single month – a single activity.*

Some field notes from a Building Materials Wholesaler meeting show that the bookkeeper was able to use the program quickly and efficiently:

*This meeting lasted approximately an hour. [Meagan] was very quick to learn the program. She said that she was very close to having the July and August 2010 data from MYOB™ to input to the program. We started with forecasting two product lines, [M-Product1] and [M-Product2]. We did the COS at the same time using a margin of 24%.*

### **6.1.2.2 Accounting System Interface**

In all cases the OM was motivated to make adjustments to the accounting system to facilitate the planning and control function. The IPC Model was the catalyst for this to happen. The OMs were not suggesting that the IPC Model be changed but rather found



ways to interface via the mapping process or changed the Chart of Accounts (COA) in their accounting system.

Field notes from early sessions with the Fitness Studio record:

*<Bruce> also said that he has gone back to MYOB™ and made changes to line up with the IPC Model. He now intends to re-enter all the past data so that his predictions make sense.*

*... At this point there is a lot of discussion about the MYOB COA and its meaning. The split up of Sales is an example. <Researcher> points out that “Miscellaneous” is a bit meaningless. <Bruce> is starting to think about how best to split the sales to make forecasting easy and relevant.*

From a usability point of view, even when a mistake was made in extracting the trial balances from MYOB™ one minor adjustment per month to the past input data, solved the problem.

*When <Bruce> exported the data from MYOB, he ticked the box that rounds all amounts to the nearest dollar so the data input to the program did not balance exactly. We devised a work around by adjusting one account <in the IPC Model> that was not really important. <Bruce> enters in his own data.*

Bruce’s comments re adjusting MYOB™ during the start-up phase are:

*... I have been going back to MYOB™ <to make adjustments> and re-doing the Trial Balances. The reason for that – and that will not happen again now – but I really wanted to make sure that I had a reasonable allocation of depreciation over each month instead of just lump sums, because the monthly data that is in there now is going to help me on my forecasting for the same month the following year. I do not just want the end of the year figure. Now that I have done that and I will make sure that it is correct in the IPC program it shouldn’t be an issue again.*

### **6.1.2.3 Business Model Construction**

All of the cases except for the Computer Store completed their business model. None had any problem with completing the questionnaire. In all cases the business model section of the program had the effect of bringing out strategic issues in each business.

All the OMs freely discussed the goals for their business and what was their particular market positioning.

The transcriptions and notes that follow show how the questions in the business model prompt the OM to think strategically about the business. It seems that in each case the user benefited from having the luxury of being able to discuss strategy with the researcher. In this situation the researcher was playing the role that a business coach or consultant might play, not in an advisory capacity but more in the role of being a sounding board with regard to strategic matters.

The Fitness Studio OM described how in the early days of his business the business model changed frequently. They adapted to customer needs and experimented with different formulas until they settled on a model that worked. The transcriptions that follow encapsulate some of the deliberations that occurred whilst completing the business model.

When this organisation was in start-up mode (before the IPC Model intervention) the OM describes how the owners needed to test their business model ideas in the market place to gauge the response.

*And that was probably the reason why we didn't constantly keep re-writing the model. We gave stuff a run for a couple of months and either the customers responded to it or they didn't. In which case we dropped it and did something else. I wasn't really happy spending hours re-writing models when we were cuffing it a lot of the time.*

Responding to one of the researcher's questions; 'Sales quantity volumes not \$ value – High, medium, low?' ...

*Well... Both. It is both. I tell you the interesting thing doing some analysis on those weekly reports on activity. An interesting correlation having a look on that chart is the attendance – the usage of class figures [the number of classes a person takes per week.] to the total income for the week. That is not sales. It is the usage. The number of people that turn up. There is no doubt that the more people that use ... because if you bought a 10 pass, the sooner you get through that 10 pass and buy the next one, the more money we make. So the usage is the volume thing. Equally the price, the dollar values are important too. I would say that that is quite high.*

Responding to the question about personal/investor factors;

*In fact my argument in our meeting last weekend was “boys if you tell me that we are not on line for a growth model, then I am out of here!”.*

The following is an extract from the field notes for the Clothing Store written shortly after the final session with Hugh where the business model was completed. The notes show how the process of completing the business model was helpful in understanding how the OM views his market position and how he maintains a competitive advantage in a highly competitive market.

*We then continued with the business model – section 3. This section of the business model relates to the businesses internal capability factors. Despite the business not having a formal planning and control system and the fact that they were not using their accounting information system to advantage, there are many aspects to the business operations (internal capability factors) that were revealed during the session.*

*.... The business has built up a loyal customer base by offering outstanding, personalised service. Hugh said that his customers do the networking for him. Whilst they socialise they talk about the store, the service and the product. They also network through high profile magazines.*

*Innovation is encouraged. A staff member is developing his own label and [Clothing Store] is promoting it. [Clothing Store] also promotes the work of other designers such as a hat designer and a photographer who will be setting up a display in the store.*

In the case of the Building Materials Wholesaler the field notes show that possibly the business model should have been completed by one of the owners but they would consider themselves to be too busy to be bothered when the IPC Model was known to be a prototype and work was of a research nature.

*The business model was produced in this session. It was during this process that the true nature of the business became clear to me. It is simply a wholesaler – buy goods, sell goods. My impression was that [Meagan] did not bring out the company’s competitive advantage nor the passion for the product that I would have expected if I was interviewing the owners. She was able to complete the business model quickly and easily. The process took no longer than 20 mins.*

The Computer Store OM was preoccupied with the forecasting financial aspects of the business. However, when it came to the setting the performance factors that are part of the business model, the OM was keen to establish his financial goals. The field notes record as follows:

*I went through and explained how the 12 Performance Factors work and the Results section of the program. He immediately wanted to fill in the Targets on the 12 Business Model Parameters as per Plan. He was interested in the graphs that measure percentages such as gross margin, net profit and fixed costs as a percentage of sales. In the Results section, after setting the parameters, we went to and fro from the 12 Performance Factors screen to the Financial Reports screen to understand the values. He did not know his fixed costs as a percentage of sales but quickly was able to set a target [in the Business Plan section] once he saw the data.*

#### **6.1.2.4 User's Interaction with Software**

Three cases were represented in this section and all had favourable interactions with the software.

The transcription of the conversation between the researcher and Hugh the OM from the Clothing Store shows how the process inherent in the IPC Model was not exactly apparent but as the forecasting process was in progress understanding increased.

*Which when you think about it, that it is 2 % per month for 12 months, which is 24% growth in the business, which is good stuff. Yep. And there is nothing wrong with that kind of forecast. And then you can see what your actuals are.*

*So when you say "actuals" .. oh I see, when you start to bring the figures across each month and then you can make comparison with your prediction and it tells you down there ... and you put your actuals in there .. and the moving average is worked out on actuals. Yeah. That's good. It's very good!*

Later when the forecasting was completed.

(Clicked the 'Done' button on. Susan explains about the way the cash line is calculated.)

*This is easy, it is very easy isn't it? You like it? It's good.*

Computer Store – selected quotations:

*Matt likes the progress bar when the program is calculating.*

*I am very impressed with what it does. The whole key to this whole program is getting the cash flow.*

*Matt had completed most of the expenses but had not clicked the “done” buttons.*

Fitness Studio – selected quotations.

*Noted that he liked to use the pop-up memo field to record his assumptions. He said that he liked the auto calculation of the predictions.*

*Is month one the financial month– July? No, it is calendar month. First one is 2008 and month 7.*

This second case is an illustration of user feedback that was corrected before the next meeting. The user was confused with dates – whether the years were financial or calendar. These dates are now properly labelled in the program.

#### **6.1.2.5 Mapping – Aggregation of Accounts**

Most cases were somewhat reluctant to reduce the number of GL Line Items in the IPC Model compared with the accounting system not realizing that new accounts could be added on a needs basis.

The advantages of aggregation of accounts for the purposes of planning were not initially apparent as is illustrated with this comment from the Computer Store OM.

*Well I do a different approach. If I have a ledger account, I want it there even if it is marked as “done” and there is nothing in it. Because too much time when – oh damn we need that account because something has come up in that we are going to use that account for and it is not there.*

A key design feature of the IPC Model is the principle that planning outcomes benefit from aggregation of accounts in the accounting system General Ledger (See Section 4.1.4 where the design principles are summarised). In this section the field notes and quotations from transcriptions indicate user’s reaction to this principle. The following field note was made following the Computer Store OM’s uncertainty about aggregating the accounts for planning purposes:

*This attitude aligns with my own, when I first used the IPC Model. I wanted to put in all my MYOB™ accounts (or nearly all of them) as a security blanket. Now, after using the Model for 15 months or so, I realise that it is better to simplify the COA for the IPC Model, given that its purpose is to forecast. When the IPC Model is tied to*

*the accounting system, no detail is lost. In fact, the aggregation of accounts where it makes sense helps in the forecasting process. This is especially true when one refers to the past data in aggregated form via the GL Line Item pop-up (with Graph).*

The Fitness Studio user's reaction to aggregation when setting up the mapping was immediately positive.

*So this reads those and adds them all together? Or do I need to link them with a heading and it is the heading that gets dragged through? No ... all of those (the promotion items) will all be 5220. And your machine ... everything that has 5220, it adds them all together? So one doesn't just overwrite the other. Ok. Great. Great work!*

Setting up the Mapping in the Clothing Store case required that the COA being used in the accounting system be rationalised before the Mapping Scheme was developed.

*In this session, I showed Hugh the Mapping Scheme and the changes that needed to be made in MYOB. Most were to do with clarifying the account names, getting rid of superfluous and irrelevant accounts and dissecting the sales GL accounts into the 4 categories that Hugh suggested in the last meeting. Hugh was impressed to see the forecasting page all set up after the Mapping had been completed.*

In the case of the Building Materials Wholesaler, aggregation was quite pronounced.

*In this session we worked on the Mapping and reduced 335 line items in MYOB to 205 line items in the Mapping.*

#### **6.1.2.6 Minimal Time and Effort**

In contrast to the use of spreadsheets, the data handling in the IPC Model was shown to take a minimal amount of time. In the case of the Computer Store, the OM's accounting records were in excellent shape. The field notes recorded that time taken to complete the Mapping, export 12 months of past data from MYOB™ and import the same into the IPC Model took just 45 minutes. This example illustrates how easy the setup of the program is when the business maintains excellent accounting records.

In the case of the Fitness Studio all the MYOB™ Trial Balances for 12 months were exported in 17 minutes. Importing data into the IPC Model took 16 minutes. Some error reports were generated because new accounts had been created in MYOB™ during the year. The Mapping Scheme needed updating with only a few accounts.

During the course of the study Bruce had a corrupted data file that was not backed up. The field notes explain:

*A program upgrade was carried out on the previous data file and then we had to bring in data from January to March 2010. Ran the Financial Reports only to find that the July data was missing. Getting the file up to date only took about 30 mins.*

Bruce's comments concerning the time and effort involved in using the program are clear:

*So in a lot of ways, it is an enabler program. It means that you can do a lot of stuff far faster.*

In the case of the Dog Day Care Centre and the Building Materials Wholesaler (who did not adopt the IPC Model), they did not experience "Minimal Time and Effort" as their accounting systems and their motivation did not allow them to progress very far with using the software. Their problem was not the software but rather the systems external to the software.

#### **6.1.2.7 Impact of Graphs**

Visual representation of data throughout the IPC Model processes distinguishes it from other similar software. The users unanimously had a positive response to the trend lines and moving averages that allowed them to visualise many aspects of their business progress over time.

There were two concepts that arose from this experience.

One was that it allows the users to think about the variations in business activity over time and to allow them to gradually change their mindset from the present (this month – last month) to that of a continuum with a forward looking perspective.

The second concept is that of allowing the user to feel confident in making predictions. A graphical representation of the forecast immediately indicates whether the figures make sense. This is not always apparent when the user just looks at the figures alone.

Field notes from the Fitness Studio show how the graphs were used:

*For every GL Line Item it was really useful to refer to the past data with the incumbent graph in the separate pop-up window. At one stage [Bruce] had 6 of them open at once and was referring back to each of them!*

Computer Store:

*Graphs show that the inventory graph is quite similar to the creditors. They put the two graphs side by side for comparison .....*

*Matt at one stage took a great deal of care to understand all the lines on the graphs. He wasn't quite sure what a "best fit trend line" was. I had to explain that.*

Again in forecasting, when there is a lot of volatility in the past data, the Fitness Studio user appreciated the trend line shown on the graph.

*That it is the trend line that we need to focus on, making sure that it is on a constant upward trend but we don't want it to be full of peaks and troughs. We want the trend line to be consistently growing. Because I can assure you, that the record sales month is usually quickly followed by one in the other direction.*

In this case, the trend line gave him a basis to make a prediction in difficult circumstances. Later in the process the discussion turned on how to reduce the volatility in his sales by offering other services in known down months. Thus the software in this case was allowing the user to see the problem and then prompts the idea of developing strategies to mitigate the problem.

At various times during the many sessions with the Fitness Studio OM, he made comments about the graphs contained in the software. A sample of these quotes show why the graphical representations were so useful.

*I like the fact that that you can call up charts and view past history to compare it to. You know and sometimes to see a trend and to see a realistic trend going forward you know that you are going to get growth but you also know that you are going to have periods when you have quiet months. For me, I am the type of person who likes to not only see the figures. I like to see the charts. I like to see it visually.*

When Bruce was describing the impact of the software with his Board, the benefit of the graphs was emphasised.

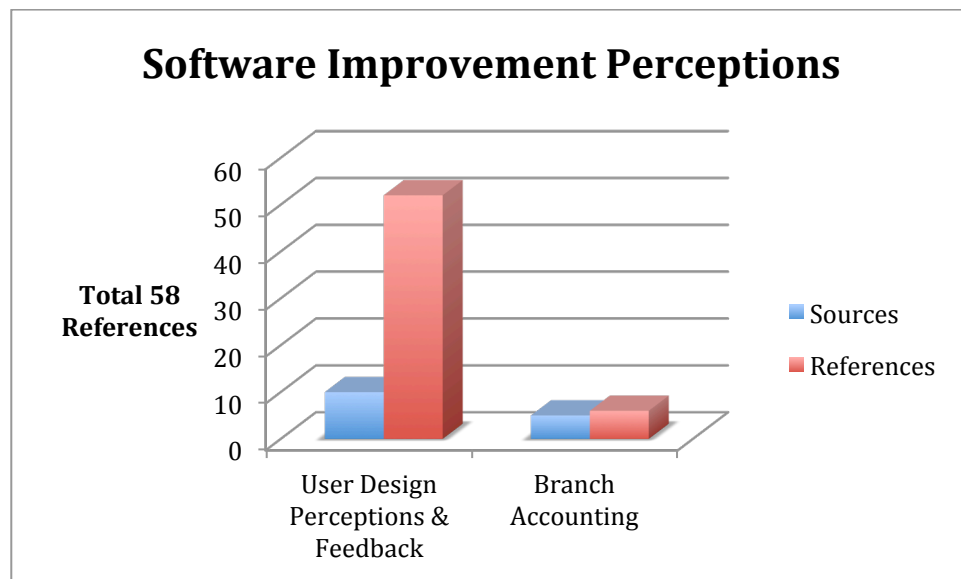
*They are getting a better representation than I have been able to deliver before. Particularly graphs. And it was that graph that I was telling you about before. All of this is part of educating them too. How to be directors. How to take a strategic view of their business. And little things like a graph that shows actuals, but also*



*shows trend lines and averages is a big educational tool for them. And it makes it easier for me to explain to them. How we are really performing over time.*

### 6.1.3 Software Improvement Perceptions

Whenever new software is introduced, the users like to make suggestions as to how the software can be improved. This is especially the case with prototype software such as the IPC Model. Figure 68 below shows the distribution of references under this heading. This item represented only 21% of the total references under Efficacy of the Software and is thus not a strong discussion point for users.



**Figure 68 - Software Improvements Perceptions**

#### 6.1.3.1 User Design Perceptions and Feedback

The software improvements suggested in this study are often specific to the user's own situation and may not be generic in nature nor commercially feasible. User input can assist developers to make the program more generic, however. An example of this is the Generic Chart of Accounts (COA) embedded in the software. As the software is tested with more and more users, the Generic COA would be expected to expand to meet the needs of different types of businesses. Nevertheless, the concept of generic needs to be carefully monitored as much as possible, otherwise the process of mapping using a large Generic COA will become too complex for the user and thus lower the value of the software.

What is important in this study is that the user's perceptions of software improvements often reveal their understanding of the principles on which the software is built and whether they are using the software as intended. Thus the suggestions for improvement are often linked to user knowledge development, which is part of improving the planning and control function of the business.

The advantage of working on prototype software in the case study context is that there are numerous minor adjustments that can be made to make the software more usable. An example of this is having a floating pop-up Generic COA window available when the user is adding an account to their Mapping Scheme. Another example is having message prompts within the program that help the user in following the inbuilt process. There are quite a few included in the prototype but sometimes they appear too often. These two examples show where the usability design can be made to be a little more intelligent, detecting the prior steps that the user has made to see if the prompting message is warranted in a particular situation.

The field notes record a need to improve the generality of the business model section of the program.

*I think that the business model section of the program is deficient. I have followed Morris and Schindehutte's model but I think that their method is too compressed. It is tempting to add more choices in each section. This could be built up as more case study experience is obtained.*

Most of the users were enthusiastic about the program and were encouraging the concept of building in further "intelligence". An example of this would be the calculation of superannuation expense (Method 17) where the Computer Store OM made some suggestions. The method could be expanded to include the Balance Sheet entries and the monthly, quarterly or bi-annual payment schedule based on parameters set by the user. The problem with this idea is that the timing of the liability does not coincide with the payment schedule nor does it take into account difference payment schedules for different funds. Forecasting the Balance Sheet item by itself has advantages. Thus not all suggestions are feasible in practice and the developer needs to be aware of over complicating the program when in the original design the principle of achieving simplicity without loss of functionality, was established.

The Computer Store OM suggestions are more in line with the expert system concept where there are more parameters and more automatic functions within the IPC Model. The point about this is that the IPC Model structure is designed in such a way as to facilitate an incremental development of automatic functions in a controlled and informed way.

In a commercial environment the program development would respond to the feedback from customers progressively over time. The aim of such a policy is to ensure that modifications that are essential are made but at the same time the IPC Model does not grow into a complex piece of software like some other planning software offerings that “*appear scary and complex*” to the small business owner (Cognos, 2011; see Section 2.6).

A parameter driven “automatic” calculation of GL items may not be generic to all business types. Whilst the Computer Store user can use a linked formula in his spreadsheet, it will be specific to his business. In other businesses, there may be large lead times in inventory deliveries meaning that inventory level has a saw-tooth profile as stock is received and gradually sold, whereas the sales profile may show steady growth overlaid with a seasonal profile. Thus the relationship between sales and inventory level is not at all amenable to treatment via an automatic, parameter driven process. This is an example why the Methods approach applied to each individual GL Line Item allows for flexibility but also allows for a variety of prediction treatments that can be overlaid as required.

The conversation with the Computer Store OM shows how keen he is to see the model become more of an expert system. The researcher explains the pathway to that end in the first instance as follows:

The thing is ... that the structure is such that it can get smarter and smarter. You can have different versions as time goes on. All those little Methods can turn into smarter algorithms. You can even actually run through the whole thing and do a .... let the computer do a budget. Or it might do it in an interactive way where it starts doing it and asks questions.

*Yes. It can ask questions. Is it seasonal? When are the seasons? When do you have price increases. Etc.. etc... Do all that and it works in the background. That is how you want it. All that the client does is answer 30-40 questions and ...*

But it does it in an interactive way. It says, this is my forecast – show the graph and asks, does that look right? Client says no.

*Yes the difference is that my profit and loss creates the actual line items in my balance sheet .....*

*So all I have to do is get my P&L to the figure that I want, get my capital expenditure budget just like you say you do, say I want to refurbish Melbourne, that is going to cost x dollars in that month and that month and I bring that in and that comes into my cash flow then that adds my fixed assets and the liabilities comes into account and then I pay it depending on the terms and it flows through. So it becomes a really integrated three stage modelling. Because you do your P&L, you do your capital expenditure and it generates a cash flow, one by one.*

The Fitness Studio's feedback was full of praise for the software as is shown in the following short extracts from transcriptions.

*... able to give me quite specific charts on actual behaviour compared with forecasting*

*... it is a lot simpler.*

*For a lot of us, it should cut down on our work load. Then I will buy a fourth company!*

*And looking at [the graphs] I also like the fact that it does quarterly (moving) averages. Because, in our business... I am highly suspicious of single month figures.*

*There is stuff that is in the IPC package that ... businesses haven't even thought about which when you see it, you say, that's a great tool or that's a great chart or that's a great thing. Of course I want it. But I didn't know that I wanted it until I saw it. Now I want it.*

The last quote is significant in that it explains the need for potential users to be properly acquainted with the features of the program before they start to make use of it. How some of the users' initial perceptions described above were not based on actual experience with the program. The observation has a bearing on the need for education about the program's capabilities to be provided to new users.

### **6.1.3.2 Branch Accounting**

All users were pleased that the software was originally designed to allow separate planning and control functions for each of their profit centres – be they other stores or branches. An obvious addition to the program is to include a new module that consolidates the separate plans and caters for inter-branch loans and inventory transfers.

This particular sub-concept was separated out from the general improvements covered above because expansion of this part of the software would have a large impact for all the cases studied. The understanding from the users is that they would welcome being able to have the program provide a set of consolidated reports incorporating each of their separate profit centres.

It was also observed that the branch accounting practices amongst the cases could have been substantially improved particularly with regard to transfer pricing between branches for goods and services, inter branch loans, head office service charging, inventory management and the like. The IPC Model could provide the necessary framework to ensure that these matters were managed according to standard management accounting practice. This design addition would then provide the catalyst for users to make changes in the accounting system for handling profit centres correctly.

## **6.2 Changes to the OM's Management Control Mindset**

The next main theme is to analyse the impact or changes that occurred as a result of using the IPC Model. The aim is to determine whether the intervention led to better outcomes for the case study businesses. An important realisation from the research was that the IPC Model had the effect of changing the OM's management control mindset. It is argued that it was the change in mindset that led to changes in business outcomes.

All case study participants used the IPC Model to some extent. Although there are ample instances of mindset changes in the adopters, there are still examples of changes for the non-adopters.

Given the differences in the amount of time spent with each case study the data is necessarily rich for the longitudinal study (the Fitness Studio) and the other adopter (the Computer Store) and less detailed for the other cases. Nevertheless the interpretations that arise here are consistent across all cases.

Although all of the OMs in the study were familiar with the concept of budgeting and understood the idea of planning, the intervention from the IPC Model and the training provided by the researcher prompted the OMs to think about their businesses differently. This effect and any resulting changes in outcomes for their businesses are explained with the following four concepts.

- OM thinking strategically about the business;
- Catalyst for accounting system improvements;
- Forward looking mindset leads to adaptive control; and
- Knowledge development.

### **6.2.1 OM Thinking Strategically about the Business**

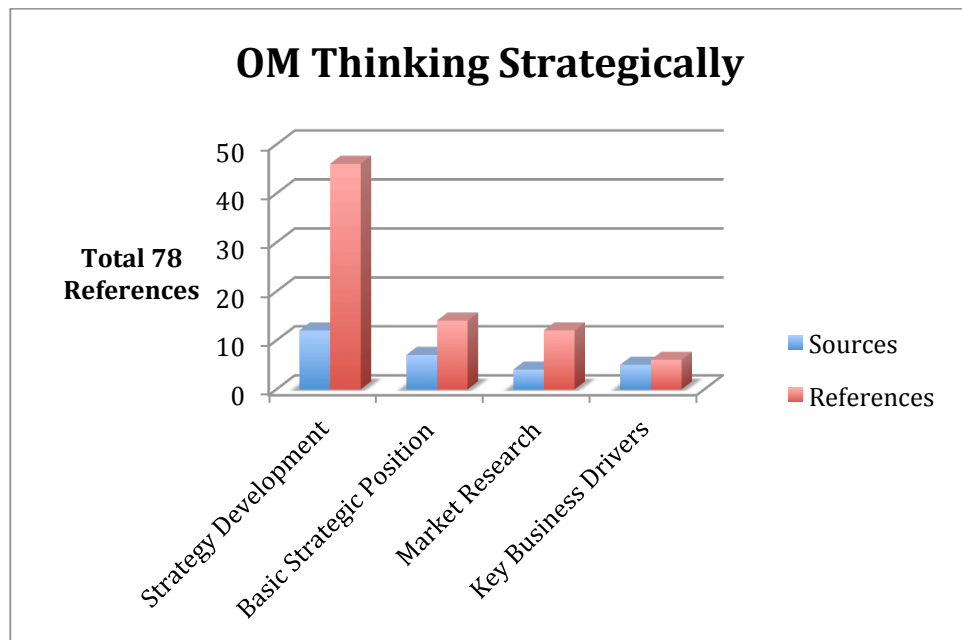
This concept revolves around an observation that emerged in all cases. As soon as a user became aware of the function within a particular section of the software, attention changed from a software focus to matters relating to business strategy.

For example, knowing that the software allows for different product groupings and encourages aggregation of General Ledger accounts from the accounting system, the users would spend some time discussing how best to consider their products and services in a way conducive to forecasting and performance measurement. The software structure is acting as a catalyst in encouraging the OMs to think differently about their business. The reason is that they now have a viable mechanism that allows them to view their business from a strategic perspective rather than the extreme detail that is inherent in the structure of the accounting and supporting systems such as the POS system.

The action of forecasting itself requires consideration of strategic matters. None of the users were inclined to enter “rough” numbers “to see how the program works”. They all took considerable care to make their forecasts. The presence of past data in graphical format helped in this endeavour. After the forecast had been made, reference to the graphs for a second time showed whether the forecast made sense. As this process was repeated for every GL Line Item, in nearly every case, matters of strategic nature were discussed. As soon as feedback on performance was available the user’s reaction was to again engage in strategic thinking about why the results were as they were.

In examining the concept of the OM thinking strategically about the business, there were four observations that arose from the data. Figure 69 below shows how the references were distributed amongst the four sub-concepts as follows. Each is discussed in turn.

- Strategy Development;
- Basic Strategic Position;
- Market Research; and
- Key Business Drivers.



**Figure 69 - OM Thinking Strategically about the Business**

### 6.2.1.1 Strategy Development

There was dense coding (many references within this concept, see Section 3.4) under this topic. In this section examples are presented that illustrate how the OM is thinking strategically about the business in the context of working with the IPC Model.

Discussions concerning strategic development mainly occurred with the Fitness Studio where the impact of the IPC Model over time was having an effect. In the case of the Computer Store the OM's orientation was largely focused on the software and seeing how it worked. He seemed to have his strategic plans well in order and did not discuss alternative plans as he was formulating his forecast for the first test case store.

For this OM, the strategic issue revolved around the fact that the IPC Model revealed that his Branch accounting method was not correctly measuring the performance of the store as a stand-alone entity. He recognised this and his focus at the end of the study was on rearranging the accounting for all his branches (stores).

Issues of a strategic nature arose in the context of performance measurement. For example, how often he expected the inventory to turnover. Again his strategic orientation was focused on high business turnover that was needed to compensate for a traditionally low gross margin.

The following set of quotations show how the impact of the IPC Model changed the Fitness Studio OM's strategic thinking. This comment shows the thinking at an early stage when the IPC Model was introduced.

*... we are looking to acquire some smaller suburban studios, to grow the business. We are also looking at a second city site early in 2010.*

These are quite expansionary thoughts in line with the high growth model in the OM's mind. However, when he had completed his first budget and the cash flow forecast was strongly negative, it was clearly apparent that his preconceived idea of the rate at which the company could retire debt was inflated and his ideas for expansion were overly ambitious. He then turned his attention to finding ways to generate more income without the capital burden of expanding to new sites. As the following quotation shows, simply adding extra classes was not always an option.

*For example at [Fitness Studio] I know putting on an extra class will generate 18 income activities at a known price. I know the cost of the instructor. However there are consequential costs that I am not so clear about. Additional cleaning, wear and tear on equipment. Our overall wages costs might currently be sitting marginally below the Payroll Tax threshold. This class may take it over that threshold attracting extra cost. So I suppose the system needs to take account of assumptions, some compliance (ATO) like .... some self imposed assumptions like pricing elasticity for example. I might also point out that in planning I have sometimes found that doing less can be more profitable than doing more.*

A later field note records:



*It is an interesting observation that [Bruce] is ignoring the most important revenue earner for the business and that is the boring old Large Group classes. This is where the profit lies and the most sales volume.*

As a result of further work with the IPC Model and feedback via actual results the strategic thinking of the OM changes. These changes resulted from the improved information available from the software tool. Note that now the OM has internalised the importance of the main income generating area of the business but also recognises the potential of the education side of the business.

*But in the meantime we are starting to set a few strategies in place for how we intend to take the business forward. How we are going to grow. One of the interesting areas is that it will come into alignment with ... focusing ... developing a strategy of a couple of core business centres. One is the normal classes – large group – that sort of activity ..... with [Fitness Studio] education becoming a much bigger aspect for us ....*

Following on is a quote that illustrates the link between plans and the accounting system, which then leads the user to be able to have accurate performance measurement.

*Well I am very keen to make sure that as well as our practical, physical plans that I am actually restructuring the accounts so they support all those ... because once we get going with the plan, we will want to measure our performance.*

In the case of the Clothing Store introduction to the IPC Model lead to strategic matters being discussed. For example, the following quotation is referring to the buying of stock as a result of the work done to establish approximate monthly stock levels and including those in both MYOB™ and the IPC Model.

*But you said that you were not going to buy as much? Yes, we are going to buy less and even if we find that we are running short of stock we can bring all this forward. Because the Europeans ... we are working with the Australian season, which is 6 months behind – where years ago we used to work with the European season. So now what we can do – we are selling our summer now, but we can actually bring our winter forward by 3 or 4 months if we want to <to cover if the stock decision turns out not to be correct>.*

This conversation illustrates how strategy development begins. Hugh's decision to buy less stock is not only based on the IPC Model work. It includes other factors such as past experience, physical observation of stock levels, sales statistics and an understanding of the market mood via his interaction with customers. It is only possible to imagine whether by having more detailed and reliable data, especially in the area of inventory control, the buying strategy would be different? Would improved financial information lead to better results for the business? Only time will tell in this case. The main point is that strategy development was occurring at an early stage as expected.

### **6.2.1.2 Basic Strategic Position**

By way of reference to Chapter 4 of the thesis where the Business Model section of the IPC Model was formulated, the basic strategic position of a business describes the underlying reason why it exists. In considering the definition of the company business model, Morris et al (2003, 2006) postulated five basic strategic positions, which define the fundamental goal of the business owners. (Refer to Sections 2.1.2 and 2.4.3) These are:

- Income;
- Managed growth;
- Rapid growth;
- Speculative; and
- Lifestyle.

The concept (or theme) 'Basic Strategic Position' arises from the data and it therefore 'grounded' because the participants were asked to comment on this element of the planning process when they used the IPC Model. The purpose of this observation is to examine which of these were applicable in the five cases and to show via the quotations how the data shows extensions to the concept beyond the five fundamental goals.

The Fitness Studio's basic strategic position is quite clear as reported earlier in Section 5.1.4. An important observation made by this OM was the need for the partners in the business to be aligned with the basic strategic position. In the early days of the business, when the partnership was in turmoil, the differences in goals of the partners then caused

a split up and the example shows how important it is for the basic strategic position of the business to be clearly understood by all the owners.

*Not surprisingly, out of six individual people, probably two or three of us were reasonably aligned.*

*One just wanted to bring a wider love of [Fitness Style] to the world, (that was it, pure and simple), nothing about whether a dollar was made in profit, it was a matter of bringing [Fitness Style] to the world.*

*Another said that I have mortgaged my house for this business and I would like to get my money back and do well, but it is just part of a wider thing.*

*One of the partners said (the only female) said I want to see my picture on the front cover of Business Review Weekly magazine.*

The current partners in the business all agree that their basic strategic position is that of ‘managed growth’.

The Computer Store’s basic strategic position is ‘rapid growth’ as is indicated in the following field note and quotation.

*Matt told me that his business was in a rapid growth phase and that they are opening a new store in Sydney shortly which will bring their total store count to four but then, they plan to expand to another 3 by end 2011. The total number of stores will then be seven. I think by that stage they will be a medium sized business, not small.*

As the OM said:

*We have to grow. I got to work the guys.*

The Dog Day Care Centre was also strategically placed for ‘rapid growth’.

*So, it has grown very rapidly in the last 3 years? Well actually it has grown very rapidly in the last year and a half. Up until August of last year (Aug 2009), actually less than a year, in the last 12 months, we only had [suburb name]. August last year we opened [suburb 2 name] and June of this year (2010) we opened [suburb 3 name].*

The Building Materials Wholesaler was also growing and re-structuring at the time of the study. Both, the Dog Day Care Centre and the Wholesaler however, were not growing in a controlled manner it seemed.

### **6.2.1.3 Market Research**

Market research is one of the inputs supporting sales forecasting. Interestingly there were 10 references to market research in the cases studied. Figure 11 in Section 4.1.1 places the IPC Model in the realm of strategic thinking/planning. The diagram shows that there are many sources of external information that are used to develop the forecasts. Detailed sales forecasting supported by market research or market intelligence is carried out off line. Only summary data that is represented by GL Line Items in the IPC Model is included in the sales forecasts.

The Fitness Studio described quite a deal of market research when the business first started. The story of the OM spending a lot of time talking to customers and analysing sales statistics was described in Section 5.1.1.

Both the Fitness Studio OM and the entrepreneurial OM collected informal market information in the normal course of their daily activities working in the business. During the study, the entrepreneurial OM went to a conference of fitness trainers held by their equipment supplier and at that conference market information was exchanged with other similar organisations in different parts of the world.

In the case of the clothing store, market information was obtained from customer feedback and from twice yearly visits to Europe where information is gathered from the fashion houses and other store owners in different parts of the world.

In the Dog Day Care Centre, market research was also obtained from investigation of other similar dog centres in the US. The Building Materials Wholesaler obtained their market research from industry sales statistics and demographics of building demand.

All of these activities are part of the planning/strategy process and are necessary to ensure sales forecasts within the IPC Model are realistic. This is an example of the IPC Model being the guide to the planning process with the software tool being the final repository for a great deal of external information needed for planning and strategy development. This is not unlike the General Ledger in the accounting system that is similarly the final repository of a large amount of external and detailed transaction data.

### **6.2.1.4 Key Business Drivers**

When thinking strategically about a business, a useful concept is to identify what are the key characteristics or measures that drive the business. These measures are ‘key’

because even small changes in their value (or qualitative measure) can materially affect outcomes for the business. The key business drivers may be one or more of the twelve performance factors or they may be qualitative in nature and not part of the formal financial measures.

For the Fitness Studio where strategies were needed to grow the business, the OM quite early in the introduction of the IPC Model identified gross margin by product group as his key business driver.

*At this stage he felt that the only way to improve the business was to know about the profitability (Gross Margin) of each separate product group so that he could focus on the winners and at the same time, know how much his “loss leaders” were costing him.*

This aim was implemented and later on, the OM was able to identify that the education side of the business was the area on which to concentrate. This area gave the business a competitive edge, distinguishing it from the run-of-the-mill gym, and had the potential to grow knowledge delivery on a global scale. Nevertheless the analysis of gross margin by product group also showed that large group classes gave the business its base line cash flow making the largest gross margin of the product group.

Gross margin was also the key business driver for the Computer Store. This business is based on the buy-sell, low margin/high turnover model. Small changes in gross margin have a large impact on the performance of the business. In the case study, the store in question was operating right on the limit and the OM made efforts to increase the margin during the course of the study. Thus he was exercising control as a result of forecasting and obtaining feedback of actual results. The control measures were successful.

In the case of the up-market Clothing Store that operated in a non-sophisticated way, the key business drivers were both financial and non-financial. For example, providing outstanding personalised service to customers was non-financial but hedging Australian dollars was financial. Both were critical drivers for this business.

What was missing was analysis of gross margin by product group, which if implemented properly would have helped this business with its strategies.

In the other two cases that had inadequate accounting systems and ad hoc planning, it was not possible to identify clearly what their key business drivers were.

### 6.2.2 Catalyst for Accounting System Improvements

In examining the concept of the IPC Model acting as a catalyst for accounting system improvements, there were two sub-concepts that arose from the data as shown in Figure 70 below. These were:

- Changes Made to the Accounting System; and
- Accounting Methods.

The findings under each of these topics will be discussed in turn. Although the reference density is relatively weak for this main concept, it is nevertheless a critical finding of the research as it clearly shows how the IPC Model can impact on operational aspects of the business as well as strategic aspects.

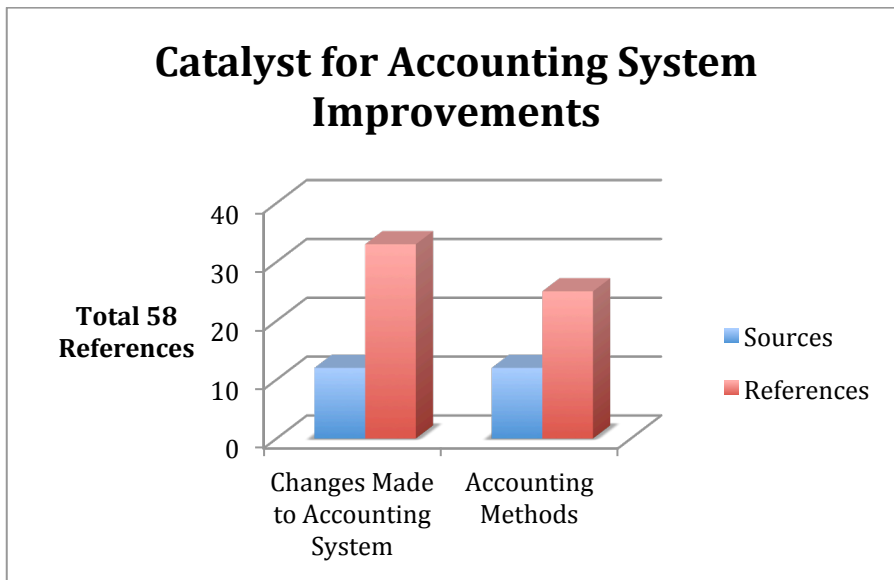


Figure 70 - Catalyst for Accounting System Improvements

The research revealed that the response to the two aspects of interface with the accounting system was for the user to make changes to the accounting system – not for the user to change or want to change the IPC Model. The IPC Model was impacting on both the accounting system configuration and its operation. This happened in all of the cases. The inference to be drawn from this concept is that the planning function quickly takes on the role of driving operational aspects within the business.

Where there was a conflict between the accountant’s view of the accounting system and the planning view, the user would try to satisfy both requirements. This compromise was achieved by using the flexibility that the mapping concept provides for the user.

### 6.2.2.1 Changes Made to the Accounting System

The Computer Store was keen to make changes to its accounting system as a result of working with the IPC Model.

*There is a blip in the Cash result, which is caused by funds transfers between this store and the others. Matt talked about changing the way that he deals with this in his MYOB™ accounts so that the cash balance in each store is realistic and reflects how the store is performing.*

In the Fitness Studio case, changes were made to the accounting system quite early in the IPC Model implementation process.

*In seeing the charts that the IPC produces means that I can see what it can do and based on that, I have now gone back to MYOB™ accounting system and restructured my accounting system.*

The Fitness Studio in trying to explain the cash flow predictions in the forward projections discovered the reason.

*... we found that they were substantially easier and cheaper for us to purchase overseas stuff.... At that point it became quite a major purchases. On Visa in May and June we probably purchased over \$20,000US of equipment, supplies and royalties from [supplier] (North America). That is about \$26,000 AU. So .. it was at that point that I had not kept a close eye on the transition from petty cash purchases to big purchases. And I haven't been running up until now, the Visa as a separate bank ledger on the Balance Sheet. Basically, I was using it like cash.*

Once the reason was known, the OM added a Visa Card liability to his accounts and re-forecast the Visa Card as a separate liability account. The results showing in the IPC Model prompted this change in the OM's accounts.

The Dog Day Care Centre OM realised that their accounts were not being properly managed and set about having an accounting firm revise the chart of accounts and then maintain those accounts:

*The other thing that we need to do is that in our previous set of books we had expenses in there that should have been capitalised. For example, Bond. That should be capital not expense and stuff like that. We obviously have to sort all this out on our new set of accounts.*

In the Clothing Store case there were superfluous accounts in the accounting system that needed to be rationalised. Some of the names of the accounts were historic and needed to be renamed for clarity. The OM and the bookkeeper were quite amenable to making the changes. It was apparent that they were beginning to see how helpful the accounting system could be once it was modified and became part of the planning process.

*In this session, I showed Hugh the Mapping Scheme and the changes that are needed in MYOB™. Most are to do with clarifying the account names, getting rid of superfluous and irrelevant accounts and dissecting the sales GL accounts into the 4 categories that Hugh suggested in the last meeting. Hugh was impressed to see the forecasting page all set up.*

### **6.2.2.2 Accounting Methods**

As described in Section 6.1.1 above there were quite a few accounting methods being used that if changed would improve the planning process and the way that business performance is measured. However, in cases where accounting methods were not easily changed, the result was to inhibit adoption of the model. (See Section 6.3.3 below).

The field notes for the Clothing Store reveal quite a few deficiencies in the accounting system and illustrate the point above as follows:

*The method of measuring cost of goods sold is simply to enter in the purchases as and when they are paid for. Thus the gross profit figure in the MYOB™ accounts is not a true representation of reality. The accounts do not reconcile with those of the accountant.*

*There is no accounting for depreciation or lease payments. There are variable expenses in the overhead costs.*

*It was clear that there are two sets of accounts for this business. The “tax accounts” and the “management accounts”, except that the latter are not really working for the owners.*

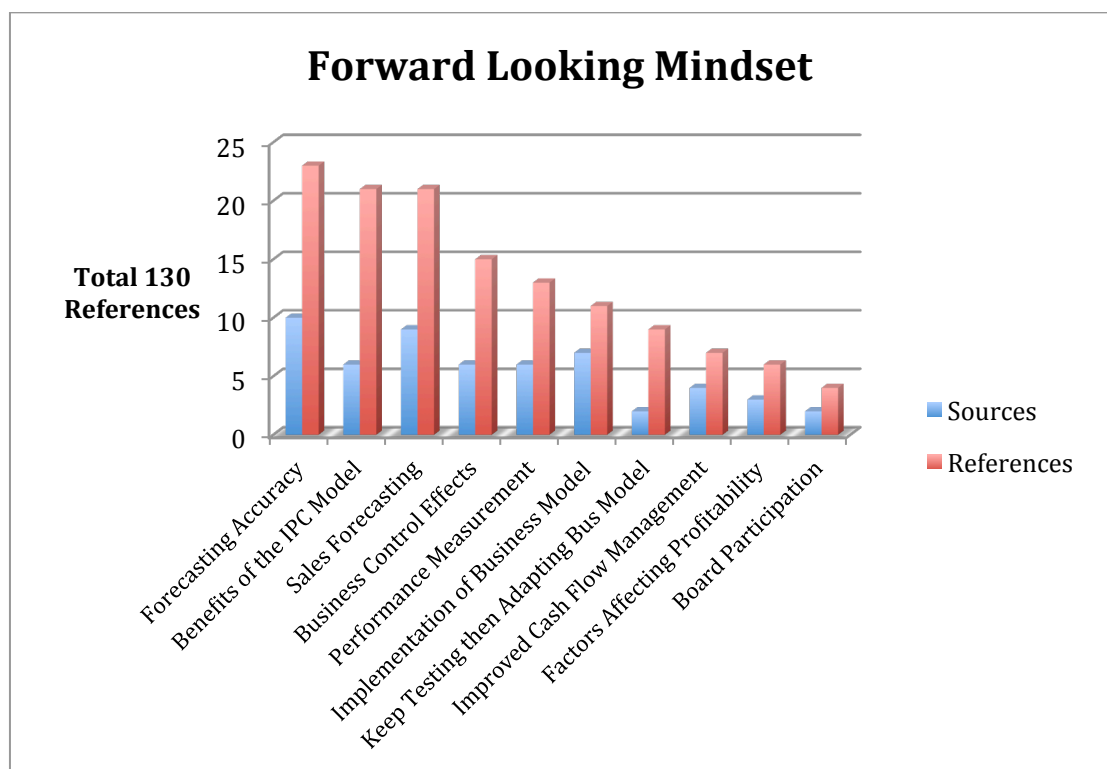
These notes are also applicable to Section 6.3.3 below as they are a factor affecting the ability of the case to adopt the IPC Model.

### **6.2.3 Forward Looking Mindset leads to Adaptive Control**

This concept addresses the process where the mindset of the OM gradually changes from attention to the detail in the accounting system or their spreadsheet analysis to the IPC



Model process. The reason for this is that the IPC Model is set up specifically for the process of setting overall goals, articulating strategy, setting performance measures and then forecasting desired outcomes. The built-in feedback mechanism derives exactly from the accounting system with which the user is familiar. The exact translation into the planning format is the fact that builds the user’s confidence in the planning process. It is this confidence that turns the mindset from the short term snap shot approach embedded in the accounting system to the forward looking on-going process of the IPC Model.



**Figure 71 - Forward Looking Mindset**

Figure 71 above shows the distribution of sub-concept references that contribute to the concept of Forward Looking Mindset. The concept is densely referenced being one of the three most important concepts in the analysis. There are ten sub-concepts that are discussed separately in what follows.

### 6.2.3.1 Forecasting Accuracy

The research showed quite clearly that forecasting accuracy does improve with time and practice as is shown particularly in the discussion of the Fitness Studio (Section 5.1).

There is a subtle mindset change that occurs as a result of the IPC Model aggregation process that occurs when the mapping is set up. OM's that are familiar with their accounting system will be used to dealing with a large number of accounts. When the mapping process occurs it is recommended as part of the IPC Model process that similar accounts be aggregated to aid in making predictions. After several feedback cycles the OM starts to view his company's past performance and forward projections in terms of the reduced number of GL Line Items. These become the focus of attention. Only when a particular GL Line Item is not performing as planned is it necessary for the OM to return to the accounting system where details of the individual accounts that comprise the IPC Model GL Line Item can be examined. In the accounting system the OM can drill down all the way to individual transactions.

The point is that the OM is able through the Mapping mechanism to focus attention on a smaller number of GL Line Items in the IPC Model, which is a change in mindset from too much detail to just enough detail. This is a significant step towards a management control mindset as opposed to micro management that becomes confusing at times for the busy OM.

In all the cases this phenomenon was observed to some extent, especially in the case of the Fitness Studio. The Computer Store OM did not feel comfortable with the aggregation process. He needed more time working with the system. None of the OMs really took advantage of the simplification process as much as they could. This is expected to be a typical pattern for OMs who are just beginning to work with the IPC Model.

The question to ask is whether the policy of aggregating general ledger accounts for planning purposes is an undesirable feature of the IPC Model. The argument for aggregation is that the detailed process of forecasting each GL Line Item is simplified. The reason for the hesitancy with two of the case study participants was their unfamiliarity with the MCS embedded in the IPC Model. Until they have experienced the benefit of having a one hundred per cent accurate link with the accounting system there tendency to avoid aggregation is understandable. It does not matter if they do not aggregate. It just means that they will need to forecast more GL Line Items. Those users who want to take advantage of the simplification process can do so.

### 6.2.3.2 Benefits of the IPC Model

The change in mindset from the snapshot or backward looking view of the accounting system to forward looking, is a concept that eventually leads to improved management of the business and is the main benefit of the IPC Model.

Both the Computer Store and the Fitness Studio commented about taking the IPC Model forecasts to the Bank should they need a loan. Lending institutions of all types are interested to see if the business is well managed and that means having clear indications of goal setting, forecasting, performance measurement and control being exercised. The IPC Model's inbuilt process is designed to provide all these features.

The Fitness Studio OM, described the main benefits of the IPC Model as:

*... the information coming through that I apply to the IPC program is more specific and accurate;*

and

*seeing the charts that the IPC produces means that I can see what it can do.*

There are many references in earlier discussions that also support the 'benefits' of the IPC Model in terms of its functionality but the change in the OM's mindset towards the function of planning and control is the main benefit that was observed but not necessarily specifically articulated by users.

### 6.2.3.3 Sales Forecasting

Most of the references concerning sales forecasting were operational in nature comprising discussions with the researcher about how best to make the forecast. For example, should a growth rate be used or should there be a modification made for seasonal variation and similar. Sales forecasting is probably the most critical aspect of a forward looking mindset for any business owner. Without sales the business does not survive.

The key here is that the act of sales forecasting is encouraged to be adaptive. The IPC Model allows the user to continually adjust as new information becomes available. The predictions to the end of the forecasting period are also adjusted each month to incorporate the latest month's figures. Automatically adjusting the sales forecast is the mechanism that encourages the OM's forward looking mindset. Repeating the actions month after month reinforces the change.

#### 6.2.3.4 Business Control Effects

The argument here is that in the case of the IPC Model, business control is ‘adaptive control’ as outlined in the IPC Model design principles in Section 4.1.4.

In the cases studied, evidence of adaptive control is really only apparent in the Fitness Studio longitudinal study. There needs to be several monthly cycles for the control aspect to emerge. It depends whether change is warranted as well.

The Computer Store control aspect focussed only on improving the gross margin and that adjustment may have happened despite the IPC Model intervention. However he did react to inventory turnover as reported in Section 5.5 earlier.

As a result of the feedback, Matt was keen to give management attention to that aspect of his business. Before the IPC Model, he did not know what the inventory turnover was for the case study store.

Some quotations from the Fitness Studio indicate the progress that was being made by the OM with his planning. He was obviously pleased with the performance achieved for financial year ended June 30, 2010. This performance was achieved through improved control of the business over nine months working with the IPC Model.

*We have an opportunity now to start the full financial year with a clean bill of health and with forecasting for a full year ahead. And actually it is an opportunity for the first time really to work to a month’s budget.*

*Yesterday, when I was sitting staring at the screen, I gave myself a 30 sec pat on the back. But looking ahead it is quite clear.*

The next quotation is an example of the forward looking mindset that this OM has developed. He is actively thinking about outcomes for 12 months ahead.

*Looking roughly at the figures and documents, my aim next year, is to see if we can’t get our profit up to \$150,000 and I reckon that there will be a little bit of growth with activity and there is also (after looking at the screen a few days ago, staring at it) I reckon that over the course of the year there is a good \$50,000 of expenses we can get out.*

(Note that this quotation is repeated here from section 5.1.5 where it was used to indicate how Bruce had an inflated view of his profit expectation. Here the same quotation is showing the forward looking attitude of the participant.)

Examples of “adaptive control” are when Bruce noticed bad sales months but adapted to reality by introducing courses in those months to boost sales.

### **6.2.3.5 Performance Measurement**

The series of performance measurements in the Results section of the IPC Model could be thought to have a backward perspective as they measure what happened last month. However, the measure is tested against the longer term targets set during the definition of the 12 Key Business Model Parameters. This encourages the user to consider how each measure compares with the target.

The Computer Store OM was most interested in the performance measures as is described in Section 5.5. The OM must be forward looking if the targets set are realistic and there is a desire to meet those targets.

### **6.2.3.6 Implementation of Business Model**

A forward looking mindset is needed to complete the business model. The Fitness Studio set their model and over time showed that they were implementing it quite successfully.

It is interesting to observe the dynamics of the computer store that did not have the time to complete the business model section of the program. The observer saw the situation with some frustration as is illustrated by the following field notes.

*This is an example when the IPC Model is crying out for control but the OM is too busy to address the problem as is off opening new stores! Shouldn't you make sure that the stores you have are making profit first. Maybe they are and maybe Matt's strategy is to run the [Suburb] store at breakeven for a while to establish market share. Unfortunately, I am not privy to the overall strategy or the business model, which would explain the apparent actions.*

This is a case where the OM is not using the IPC Model to its full extent. From experience with the Fitness Studio, this takes quite some time.

This illustration shows that not only should the OM have a forward looking mindset but also there is a need to take the time to be meticulous in following the IPC Model process. There needs to be a willingness to pay attention to the detail. The Computer Store OM needed to stop and complete his business model and ask the question whether the rapid rate of expansion was a wise strategy.

The IPC Model is not a limiting factor here. The OM has the choice of not producing their Business Model in the software. It does not affect the financial model. The example above (Computer Store) illustrates the disadvantage to the OM of not completing their Business Model.

### 6.2.3.7 Keep Testing then Adapting the Business Model

Before beginning with the IPC Model, the Fitness Studio was adapting through necessity. Unlike the Computer Store, Bruce was quite conscious of his business model and kept revising it regularly after testing the model in the market place.

*Although, along the journey, we would have these periods when we would get away from the written model and every six months or so, I would sit down and re-write the whole thing to get back to what it was. And then it would drift away again. So it pretty well depended on my timing and how often I was able to come back to it. But I probably came back and re-wrote the written model – it wasn't re-writing it – just adjusting it. It was probably every 4 or 5 months.*

As later revealed the 'control' aspect of adapting was missing. This was because he was not able to measure what was happening financially in the business. He needed to collect information that aligned with his planning needs.

### 6.2.3.8 Improved Cash Flow Management

The Fitness Studio OM described how a temporary improvement in cash flow was a spurious event in the days before using the IPC Model.

*.... in February we introduced for everybody a product – for the same price of a multipass they could have 11 classes instead of 10. And the aim there was that we could get more people to convert from casual usage – hey I might save myself \$20 if I buy a multipass. ... and did it work?*

*It worked brilliantly and in fact it worked so well we had a record sales week. We then followed with three weeks of practically no sales. All we did was that we just contorted our cash flow. Even when it was happening, I thought that this is too good to be true ... there were signs because our usage rate in the studio did not increase but our sales did. We were only selling to existing customers. It is the same amount of money but being compressed. If the number of new people coming in had*

*increased at the same time, I would have been happy but it wasn't. Good lesson learnt.*

The question here is to ask whether the blip in cash flow would have been predicted if the OM was using the IPC Model? Possibly. What is illustrated here is the importance of considering cash flow implications when forecasting sales. It is the same logic (in reverse) that needs to apply when considering accounts receivable versus sales. In the case above, the payments were made in advance of the delivery of services.

This is a perfect example of the concept that planning requires “hard cognitive work” (Davis, 1974) regardless of the tool used to aid the planning process.

### **6.2.3.9 Factors Affecting Profitability**

Regardless of the motivation for running the business (Lifestyle versus Growth for example) the need to focus on profitability ensures survival. There are two quotations in this section that show how planning and awareness of the business performance leads to control.

Field notes from the Computer Store case reveal the concerns of the researcher.

*My observations of this business were that the resulting gross margin was very slim and it is difficult to make a profit. In such cases, having a good MCS is almost mandatory as it would be so easy to slip into creeping loss situation.*

In the Fitness Studio case control impacts are evident in this quotation.

*And more and more customers buy on-line. From a planning point of view, this means ... even 6-8 months ago. At peak times we had to have 3 receptionists on just to deal with everybody. Otherwise we had this bottleneck. We have cut something like 60 hours out of the reception roster recently and no one has noticed. Because we have shifted a lot of the customer behaviour over to on-line buying.*

(Note that this quotation is repeated from Section 5.1.5 where it was used to explain the graph in Figure 56.)

In this context the quotation is an example of adaptive control being exercised to improve profitability and in the case of the Fitness Studio assisted with the repayment of debt.

### 6.2.3.10 Board Participation

This concept is best summed up with the following quotation from the Fitness Studio OM:

*They are. If I told you that they are exceptionally excited, I would be lying to you. They don't ... all they know ... they see the Board reports coming out. They are getting a better representation than I have been able to deliver before. Particularly graphs.*

(Note that this quotation is repeated from Appendix D where it is the response to a question asked of the OM during an interview.)

The important concept here is the fact that the OM is taking the results of his planning to the Board. Of course not all small businesses have a “Board” as they are family businesses akin to the Dog Day Care Centre (and the Clothing Store). In their case, if the IPC Model was being used by the OM, the equivalent would be that he shows the results to his wife who is the one who is not interested in the accounts. By this means she could, like Bruce’s Board members, be educated in the mechanisms of running the business.

This example is illustrating that persons other than the OM can benefit from the use of the IPC Model both from receiving useful information and from the ‘learning about the business’ aspects.

### 6.2.4 Knowledge Development

This concept embodies many facets of learning that result from the implementation of the IPC Model. The learning is not confined only to the user (who is usually an OM of the business) but also other internal parties such as the Board of Directors, the bookkeeper, operational managers and external parties such as the businesses’ bankers, accountants and possibly customers and suppliers.

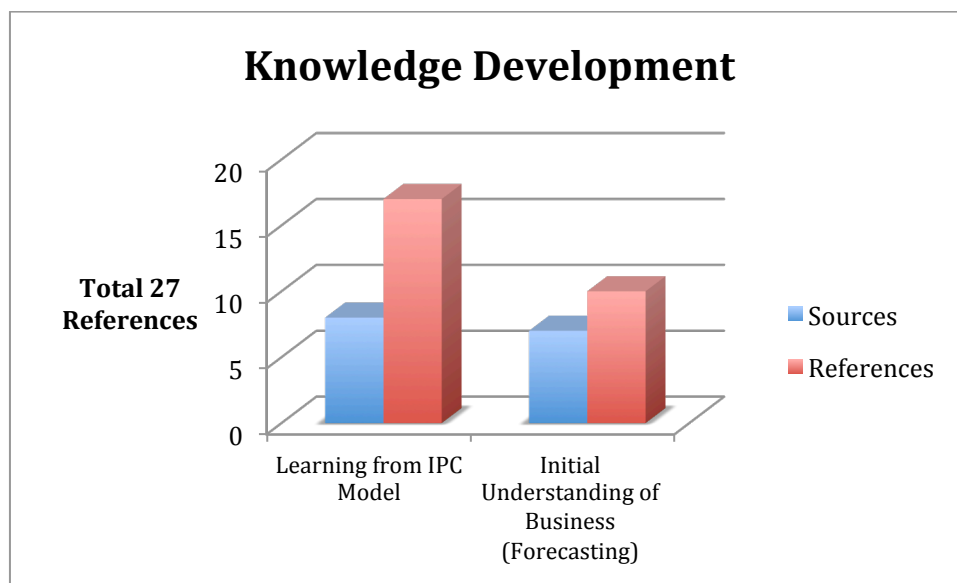
This is because as soon as the OM’s management of the business becomes strategically driven, based on the goals and targets set in the IPC Model, the information itself becomes knowledge. For example: ‘margins on product A are slipping against our target of x%’. The strategy to control the problem may be negotiation with suppliers of product A or looking at ways to reduce the cost of production or changing the product



itself to a lower cost version. The knowledge development in this example is related to product A and its characteristics.

The user learns to adopt a forward looking mindset and to be Balance Sheet focussed in addition to attending to the P&L. More importantly the user learns to become adept at predicting outcomes from both an analysis viewpoint (knowledge of trends) but also because the user is controlling the business and making the desired outcomes happen.

A fully functioning IPC Model that is integrated into the management ethic of the business provides evidence of a quality MCS. This influences bankers and venture capitalists when funding for growth is sought.



**Figure 72 - Knowledge Development**

Figure 72 above shows the distribution of references that contributed to the concept of Knowledge Development. Although there is weak representation of quotations to this concept the interpretation is that knowledge development is something that people do not discuss openly as a general rule. The research observation however is that learning was occurring amongst all case study participants without their overt tacit acknowledgement. There are two sub-concepts to be discussed in this section.

#### **6.2.4.1 Learning from the IPC Model**

The Computer Store OM was aware of the learning function of the IPC Model and similar software. He was talking generally about the function of such software.

*It is not the software that is magic it is that the [OM] sees the end result ... hey this is giving me a warning about my business. This is teaching me where the issues are.*

The field notes record the Fitness Studio's knowledge development,

*[Bruce] is starting to think much more strategically about his business. His understanding of fixed and variable costs has improved. He realises that he had underestimated sales levels in his first attempt at predictions.*

And the OM himself was aware of the learning process. His comments were made after a few months of working with the model.

*But the real refinement... what I haven't got the IPC to do yet, but I will do, it may take another 4 – 5 months to get there, will be allowing me to isolate a particular activity in the business to the point where we actually go physically into the business and say right we need to shave 10% of that cost and how do we go about doing that.*

#### **6.2.4.2 Initial Understanding of Business (Forecasting)**

In the Fitness Studio case, learning occurred after the first forecast was produced. The forecast was corrected but the OM was then aware that there were limits to the rate at which the business could pay back debt.

*The result of the plan which is indicated in the long term cash flow showed the cash going negative. Bruce was surprised at the result. An analysis of major cash movements in the balance sheet showed that Bruce had been too ambitious in paying off debt such as a wage payable, Superannuation, PAYG Withholding – for the company, BAS payments in arrears. When they were all added up, the cash outflow over the forecasting period had to be of the order of \$100,000. This explained why the cash predicted at the end of year was negative \$82,000.*

In the Clothing Store's case, the OM was well aware of "running blind" and recognised that many of his control problems could be alleviated once he made the investment to install a POS software system.

*Well first we need to get control of inventory as we have said. And that is probably what is causing a lot of this. Perhaps. The overbuying, getting rid of the stock at cost or below cost.*

## **6.3 Factors Affecting Adoption**

The last theme looks at both the positive and negative aspects of successful implementation of the IPC Model as though it were a completed commercial product. The theme concepts have evolved from case study experience but are extrapolated somewhat to tease out the principles of using a software tool to influence management practices in small business.

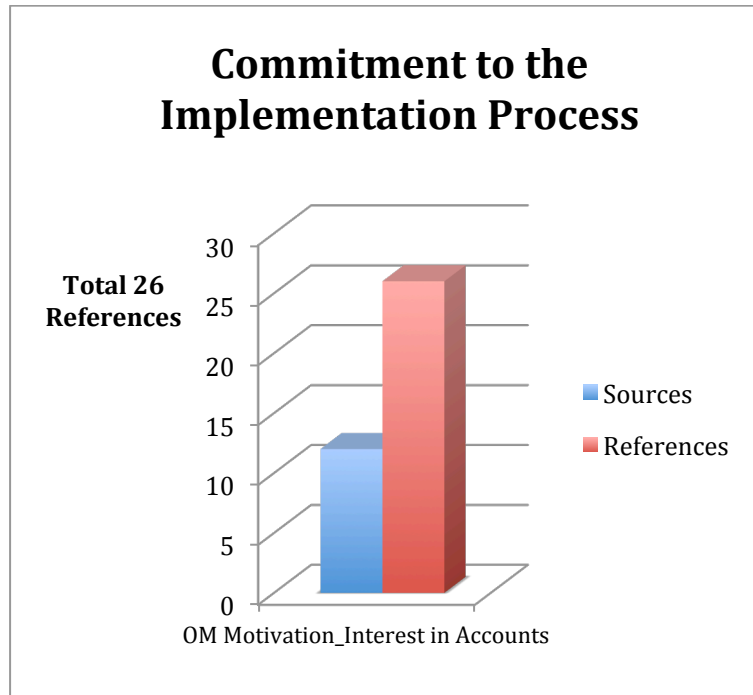
There were five cases. Two adopted the model as part of their business management system, one was keen to adopt but was prevented by a fundamental barrier and two did not adopt. The research gave insight into quite valid reasons why some businesses may never adopt or may be slow to adopt the system. The research also revealed that even with partial adoption there are benefits to be gained from introduction of the IPC Model.

Four concepts that embody factors favouring or not favouring adoption were evident from the data collected. These are:

- Commitment to the implementation process;
- User knowledge and the roles of external professionals;
- Status of the accounting system and IT infrastructure; and
- Business maturity and complexity.

### **6.3.1 Commitment to Implementation Process**

The IPC Model is not like a software package where the computer literate user either learns to use the software by “playing” with it or by taking the on-line tutorials. Whilst navigation through sections of the IPC Model is quite straight forward and some of the functionality is fairly self evident, the implementation of the software in an on-going business is quite a different matter.



**Figure 73 - Commitment to the Implementation Process**

Figure 73 above shows that there were 26 references from 12 sources in the data concerning commitment to the implementation process. The sub-concept under this concept was OM Motivation - Interest in Accounts.

**6.3.1.1 OM Motivation - Interest in Accounts**

As is shown in the themes and concepts derived so far in this analysis, there are pre-conceptions that exist about how to plan and control a business that may not be in alignment with the IPC Model process. Above all, the implementation of the IPC Model requires an alignment in mindset of the owners regarding the way the business is managed.

Developing the knowledge and skill to engender a forward-looking mindset and the techniques of adaptive control in the business culture, takes time and commitment. It is a process that requires the development of skills in forecasting and improvement in understanding of the business’ driving mechanisms. It requires the user to be patient and diligent.

In the two cases that did not adopt the IPC Model their commitment was not really there. The field notes record the frustration for the researcher.

In the case of the Dog Day Care Centre:

*We had arranged to meet at my office for the first meeting. He did not turn up at the time agreed despite the fact that I had sent a reminder SMS the previous day. When I did speak with him, he did not even apologise.*

There was a problem in that Bill had to ask the accountants to enter account numbers into QuickBooks®. Even though he was supplied with the numbers to be entered that would have taken about 20 minutes to do, the job was never done. The note below is an extract from an email that the researcher sent to the participant.

*In your case, I am wondering if the need to include account numbers in your QuickBooks® is the stumbling block? If it is, why don't you send me the QuickBooks® data files with Jul, Aug and Sep figures in them, and I will modify the IPC Model to be able to translate from Alpha Account Names to the Generic Chart of Accounts.*

The IPC Model prototype was not programmed to deal with an alpha account name. His response by telephone was:

*You will be pleased to know that we now have numbers on our accounts too. (Aside: This turned out not to be the case and became a major stumbling block. By October Bill had not supplied current information and had not had the account numbers entered even though I had created a COA list with the suggested numbers already entered on them.)*

In the case of the Building Materials Wholesaler the field notes report frustration with meeting arrangements:

*I went out to site at [Melbourne suburb] expecting to begin the forecasting at long last and to at least show Meagan how to import the Jul and Aug data. She met me at reception and said that she could not meet with me as the accountants had her doing many changes (again!) and that she had three days work ahead of her. She said that she had sent me an email about it! But she had not as I had checked emails and was up-to-date with them.*

This was the third time that the researcher had been turned away from a pre-arranged meeting. The question to ask is whether the problem is that the bookkeeper is just too busy to be involved in the planning and control function. Possibly this function should

be the role of one of the two owners of the business. The field notes however, show distinct lack of interest by the owners.

The observation is that the bookkeeper would have liked to be involved and was certainly enthusiastic at the beginning, but as time progressed the stresses of her job, prevented her from participating.

Time constraints with the research programme did not allow for further persistence with the case. The two quotes that follow, report the bookkeeper's view of the owner's management style.

Let me ask you a question. I am interested in the management side. Are the owners of the company getting the accounts every month and looking at the performance?

*Not really. We have employed someone. We have someone who is a consultant. He does come in once per month. I work with him. He basically looks at the profit and loss report. Jim and Margaret get copies of the profit and loss reports but they don't really look at them thoroughly.*

And later .....

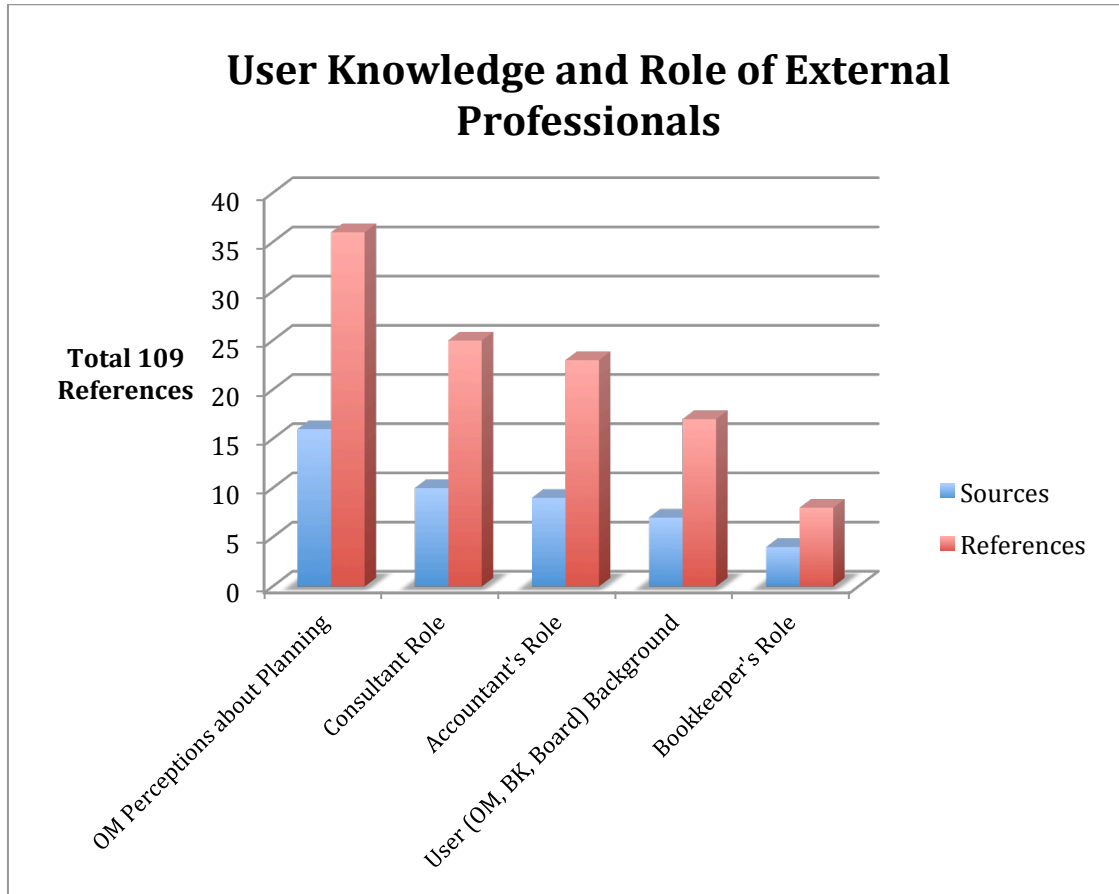
*Really strictly, Margaret and Jim – all that they are interested in is “have we made a profit?”. They are not really interested in how it got there. They are not interested in the accounts or how we have spread everything out or how we have allocated the accounts.*

With the Clothing Store, the owners were extremely well motivated to learn about the IPC Model. They never missed a meeting and put in a lot of effort to implement what they could. In the end, the lack of a reliable method to measure the stock level meant that the IPC Model could not be used effectively. In my view this case is not a failure. The owners need to invest in a modern POS system and then they will be able to install the IPC Model. They are the type of owners that would benefit from consulting assistance to build up their skills in the planning and control function.

### **6.3.2 User Knowledge and the Role of External Professionals**

This concept arises because the use of the IPC Model requires a sound knowledge of management accounting to ensure successful implementation. The cases reveal and literature confirms that such knowledge does not normally reside with the OM of a small business. Even when it does (as in the Computer Store case), accounting preconceptions

can sometimes inhibit the successful implementation of the software. In these cases the OMs have to be willing to learn and to make changes to their management control systems.



**Figure 74 - User Knowledge and the Role of External Professionals**

Figure 74 above shows dense coding supporting this concept. Each of the sub-concepts that comprise the main concept is explained in decreasing order of importance. Each has an impact on whether the software is likely to be adopted.

### 6.3.2.1 OM Perceptions about Planning

In earlier sections of the analysis accounting preconceptions were highlighted. If the OM is not prepared to make changes to the accounting system in line with the IPC Model process and management accounting practice, then there is an unresolved incompatibility that may prevent adoption of the software tool.

The Fitness Studio OM had a strong perception about the benefits of planning. He was prepared to make changes to his management control system to encompass the IPC Model process. He was successful in achieving adoption.

However, others did not have realistic perceptions about planning or what a tool could do for them.

For example, the Building Materials Wholesaler's initial impressions were that of a fairly smart tool – maybe even an expert system. The user's comments sum up her expectations, which are highly inflated.

*Because I believe that if I can just press a little tool on a computer and go ... tell me what my stock is and what I have done in the last six months and give me projections for the next six months and I could do that in 10 mins instead of three days ... That would be worth a lot? Yes, that would be fantastic.*

By comparison, the Fitness Studio had realistic expectations and a planning mindset at the beginning.

*My impression it is ... I am a big fan of the concept that business plans are not something that you just write at the beginning of the business and it goes on the shelf. For me, that is why I look a lot to the financial aspects of the business plan. For me it is a working document. It is part of the management of the business.*

Another observation in the case of the Computer Store OM is that although he is a chartered accountant, he was still not using the IPC Model as intended having preconceived ideas about how to measure cash flow via the Balance Sheet. Field notes at the time explain the problem.

*Note: Whilst listening to the tape I note that Matt missed some of the Balance Sheet items. E.g. Improvements at Cost. There were past data there. I think that he does not really understand the Balance Sheet and he would debate me strongly on this point. He does not realise that the cash will not calculate correctly if you leave out Balance Sheet line items! In Liabilities he missed Customer Deposits and Loan Account [Head Office] ... Matt did not know that he had values in these accounts. Or maybe he did but did not think that he had to project them?*

This event illustrates the case where there is an initial misunderstanding of the requirements of the IPC Model that is corrected as time progresses and the user becomes increasingly familiar with the functionality of the model. In this case the user quickly corrected the omission and a preconception was changed. The Computer Store OM adopted the software.



### 6.3.2.2 Consultant Role

This concept refers to whether an external consultant is required to mentor the OM about planning and control in their business and at the same time, introduce the OM to the features of the IPC Model.

The researcher played the role of introducing the functionality of the IPC Model but did not act as a mentor or advisor in the planning and control of the Case Study businesses.

Three of the case study OMs suggested that they could imagine that accounting firms would introduce the IPC Model to their clients as an additional service. The counter view to this is that accountants may be too pre-occupied with tax and compliance issues to be able to provide such a service. Management consultants or business coaches may be more suited to assist.

Whatever assistance is required for implementation, it needs to be offered on a regular basis over several months as it is necessary for the new user to experience the cycles of forward projecting, evaluating feedback from actual results and experience the effects of adaptive control.

The Building Materials Wholesaler had hired a consultant. As the bookkeeper explained:

*But it does not make an awful lot of sense to them [owners]. So Leon [Consultant] would normally step in, or the accountants would step in and go through that reporting with them. And that is not every month. They (the OMs) basically leave the accounting management up to me, Leon and the accountants. And they rely on the information coming back from them.*

The premise is that if the OM's knowledge in management accounting practice is lacking, the IPC Model adoption process would be enhanced if the software was introduced with the help of a consultant. The consultant would need to have business qualifications with skills in management accounting and be trained in the processes of the model. The role of the consultant is not only to familiarize the user with the software but also to provide motivation over several monthly cycles to encourage the user to do the planning and to discuss strategic matters related to the achievement of goals for the business.

There are times when the accounting calculations in the IPC Model yield unexpected results. Sometimes it is helpful for the OM that the consultant analyses the results and explains where the differences lie.

An example of this is an unexpected cash flow forecast. Usually the explanation lies in several changes that occurred in the Balance Sheet. If the OM is not familiar with dealing with the Balance Sheet, which is a characteristic that emerged in this research, then the role of the consultant can be to explain how the cash flow scenario occurred. Through this interaction the OM gradually learns how to deal with the Balance Sheet and what affect it has on cash position.

### 6.3.2.3 Accountant's Role

In the case of the Clothing Store a meeting was set up between the OM (Hugh), his bookkeeper (Angela) and his accountant (referred to as "Bill"). It was not possible to make a recording of this meeting as the accountant was not part of the research programme and had not agreed to being recorded. Thus the data for this meeting comprises field notes and researcher interpretation of the events as follows:

*Bill started off being a bit negative about the idea of introducing management accounting to the company. His attitude was that for small business, "all they really need to worry about are the cash only transactions, the cash flow – what is happening with the bank balance. There is no reason to worry about the Balance Sheet." (Implying, possibly that the Balance Sheet is too complicated for small business owners to understand).*

*Bill then said that Management Accounting was developed for larger organisations not small companies.*

*An interesting observation was that the accountant wanted to delve into detail and did not appear to have a "big picture" perspective. He was uncomfortable with the idea of forecasting the Balance Sheet saying that it was only a snap shot view of the business situation. He was concerned with money flows. The comment implied that the owners should only be forecasting cash flows (interpreted as meaning profit and loss).*

*Some of his comments were as follows:*

- *Accrual accounting was only for larger organisations. His clients use cash only accounting. The BAS was calculated on a cash only basis.*

- *The value of stock is variable. There is a distinction between Active Stock and Dead Stock. At the end of the season, stock becomes “dead” in the haute couture business. Stock only has a lifetime of 3 months.*
- *When you buy a business, the last thing you look at is the Balance Sheet.*

*The accountant’s role in this case is clearly only to prepare the tax return and this is not required until almost the end of the current financial year. It was interesting to note that the stock-take figure for the three stores is aggregated and reported only in the lowest tax paying entity. This is a perfect example of the mismatch between the needs for management accounting control and that of the accountant.*

What this illustrates is that not all accountants would be suitable as a consultant for the business using the IPC Model.

#### **6.3.2.4 User (OM, Bookkeeper and Board) Background**

The knowledge and background of each of the case study OMs was quite different.

Bruce, the owner of the Fitness Studio had a military background in the UK. Whilst in the forces he completed an MBA degree in Wales. He was well aware of the benefits of the planning and control function within an organisation and welcomed the software tool that promised to assist with the task. He was an adopter of the IPC Model and process.

Matt is one of the owners of the Computer Store. His background is as a chartered accountant having completed a commerce degree and an MBA by thesis in South Africa. He had also had some experience in programming computers in the early years of his career. He is highly computer literate and moves quickly in working with new software. He was an adopter of the IPC Model.

Hugh, one of the owners of the Clothing Stores was a top manager for a prestige car distributor before joining his wife to manage their business. Hugh, his Bookkeeper (who is his sister-in-law) and his wife who is the entrepreneur of the business are keen to adopt and will probably do so in time.

Bill, one of the owners of the Dog Day Care centres is a Process Engineer and does training courses all over Australia for large organisations that are involved in manufacturing processes. He also has a business degree. Despite these excellent credentials that cover business knowledge and process control theory (the IPC Model is a business control model), his business did not adopt.

The Building Materials Wholesaler owners wanted their bookkeeper/office manager to handle the IPC Model. Meagan was quite adept with Excel™ and MYOB™ programs and had good experience with accounts in larger organisations including a University. Her background should be quite adequate to allow adoption of the IPC Model but other factors intervened at the time of the study.

These examples show that all of the case study participants should have had adequate knowledge and experience to be able to adopt the software tool. It seems that background helps in promoting adoption but is not a sufficient principle to ensure adoption.

### **6.3.2.5 Bookkeeper's Role**

In the case of the Dog Day Care Centre that was essentially in start-up mode, they used a bookkeeper who was a friend. The results of that decision are highlighted in the following field notes:

*On the 22<sup>nd</sup> July, I went through and entered all the month's data from July 08 until June 09. I noted that the bookkeeper was continuously adding new accounts and often in the wrong section of the Chart of Accounts. For example, Rent Security Deposit was entered as an expense when it should be an Asset. This is typical of businesses not using their accounting systems properly. They tend to use bookkeepers with very little accounting knowledge, typically confined to accounts payable and accounts receivable because bookkeepers are less expensive than those provided by accounting firms.*

The above is a typical situation where the bookkeeper is not trained sufficiently in accounting or the accounting software. Such a situation is a definite barrier to adoption.

This situation may be common in small businesses that are not well managed. When a business becomes larger the bookkeeper often is an employee of the business, taking on the role of office manager as well as “doing the books”. The question that is not answered within the five case studies is whether the bookkeeper can play a role in the planning and control function? It is the researcher's view that they can. Given that they are properly taught, the researcher's opinion is that there is no reason why a bookkeeper could not bring in the data each month from the accounting system, run the financial reports and present the data file to the OM. These tasks are not difficult and not time consuming.

There is one large advantage of this approach - that is to train the bookkeeper to look at the current month's figures and compare them with the predictions. At this point the bookkeeper should be able to spot posting errors before they are discovered by the OM. This way the bookkeeper becomes more aware of the meaning of the figures that he/she deals with and can take a role in assisting the busy OM with the planning and control function.

There is support for this point of view in that Angela who did the bookkeeping for the Clothing Store case, was operating the IPC Model effectively and understood quite well what was being achieved. The researcher's interpretation of these observations was that Angela would be quite capable of taking on the role discussed above.

### **6.3.3 Status of the Accounting System and IT/IS Infrastructure**

This concept addresses the initial status of the accounting system in the business. The IPC Model imposes a classical management accounting discipline on the planning process in a generic way. While the process of mapping usually allows an interface to be achieved between the accounting system and the IPC Model, if the accounting system is deficient – in that the information contained therein cannot be relied upon or it is not well maintained – then the IPC Model cannot be an effective tool.

It is not only the accounting system that needs to be in a satisfactory condition for effective planning and control. The overall IT/IS infrastructure that supports the existing MCS is important. For example, if there is no inventory control system, no POS or the lack of a production costing system, then the IPC Model cannot be effective and adoption will not be achieved.

Figure 75 shows the coding density of six sub-concepts that support the main concept of the Status of the Accounting System and IT/IS Infrastructure. Each is briefly discussed in turn, given that many examples of accounting system anomalies experienced in the case studies have been discussed earlier. These are important observations and have a significant impact on whether the software is adopted or not.

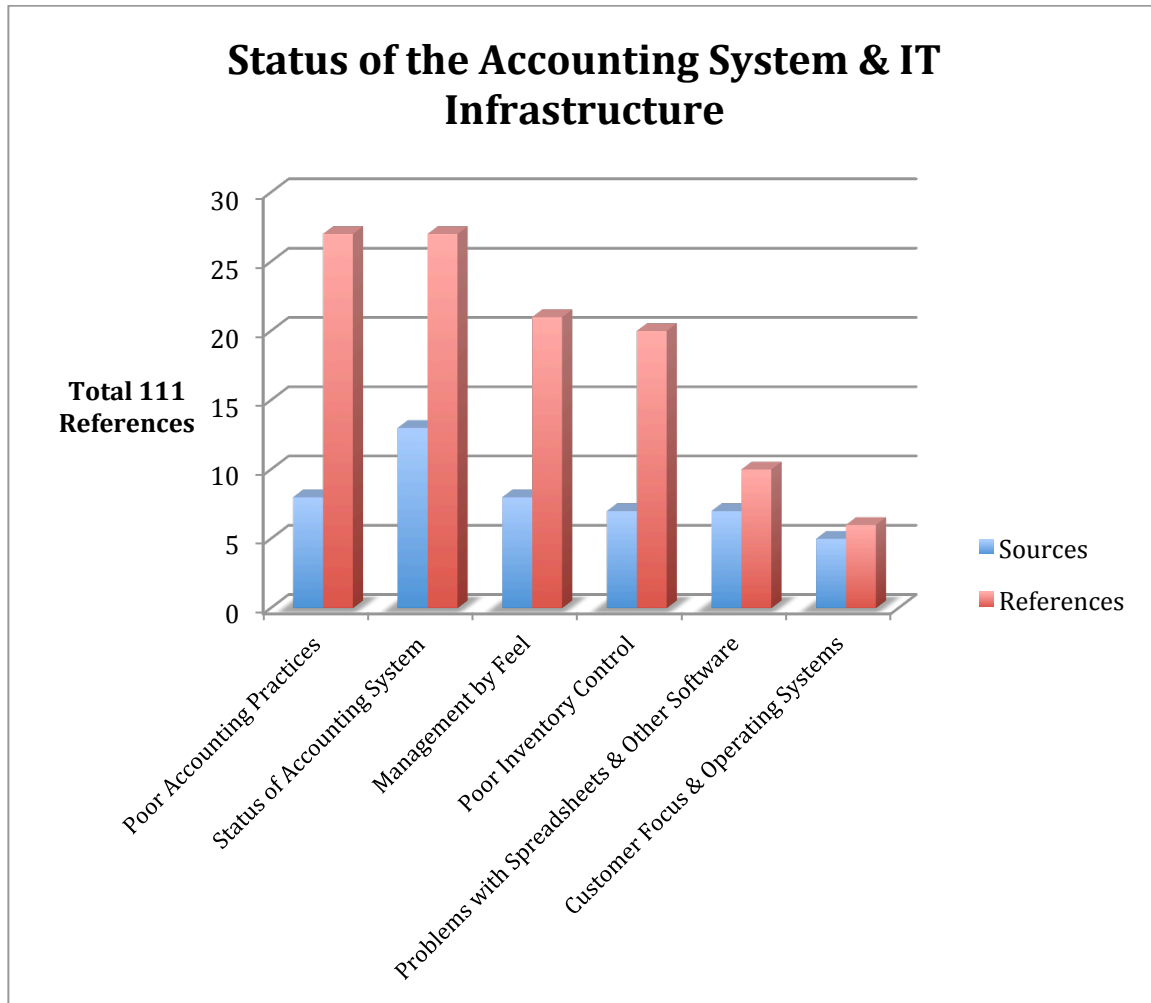


Figure 75 - Status of the Accounting System and IT/IS Infrastructure

**6.3.3.1 Poor Accounting Practices**

This sub-concept refers to businesses that do not have accurate accounts or they may not follow acceptable management accounting practices and/or their accounting system is not up-to-date. This sub-concept is distinguished from the following sub-concept ‘Status of the Accounting System’ in that ‘Accounting Practices’ refers to the way the accounting COA is constructed to correctly reflect the status of the business from a management view rather than a compliance only view.

‘Status of the Accounting System’ refers more to the operating systems or infrastructure that support the accounting system whether they be manually maintained or form part of the IT/ISs of the organisation.

Examples of poor accounting practices are those that were reported in Section 6.1.1 – Accounting Preconceptions related to the efficacy of the software. Another example is the case of the Computer Store where in an email the researcher comments:

*The disadvantage of doing branch accounting your way is that you do not accurately show how much working capital (Head Office support) is needed for this entity to meet its statutory obligations on a month-by-month basis.*

(This email is an example of the researcher acting as a change agent (Rogers, 2003) as part of the Action Research approach.)

This example is the situation where the monthly treatment of GST and PAYG payments was deferred to a single transaction at the end of the financial year. The actual payments were made via the Head Office. Depreciation was not being recorded each month. Neither were variable costs recorded against sales as opposed to general administration expenses.

In the case of the Clothing Store the field notes record:

*The method of measuring cost of goods sold is simply to enter in the purchases as and when they are paid for. Thus the gross profit figure in the MYOB accounts is not a true representation of reality. The accounts do not reconcile with those of the accountant. There is no accounting for depreciation or lease payments. There are variable expenses in the overhead costs.*

Another example of poor accounting practices is that the ‘books’ are not kept up-to-date. If the OMs are only looking at the accounts each quarter or longer, then it is unlikely that the accounts are reconciled with the bank in the intervening periods.

On the surface such businesses are unlikely to adopt the IPC Model. On the other hand if they are willing to make changes, the IPC Model can be the catalyst to motivate the changes. In these cases the poor accounting practices can be corrected and adoption is possible. Such an outcome is not possible without the enthusiasm of the OM driving the process.

### **6.3.3.2 Status of the Accounting System**

In earlier sections the poor status of the some of the cases’ accounting systems has been described. In the two cases that did not adopt, their accounting systems were in disarray. As this quotation for the Dog Day Care Centre clearly shows:

You gave me your QuickBooks® files for 08/09 and I worked on them and produced you the year's results showing all months on the one printout. And you said to me that they are "all wrong". What do you mean by that?

*Yeah! (Laughing). They are. They do not reflect the true state of what is happening at all. And I think that it is because we are not using the accounting package properly.* [Satisfactory infrastructure not in place.]

Or in the case of the Building Materials Wholesaler:

*So it's frustrating. Inventory is really important. It is important for what we've got, it is important for what we need to order in. Up until Monday, Margaret had no idea....* [Lack of infrastructure to support an inventory control system. Requires specialist software and revised operating procedures to receive and despatch inventory.]

Or in the case of the Clothing Store:

*On asking for the accountant's figures for the three stores, it was apparent that the accounts for financial year ended June 30, 2009 had not been completed. This explains why the MYOB™ accounts had not been closed off for the previous financial year.* [Operating procedures do not call for timely processing of end of financial year results.]

The clothing store's problem as indicated above was corrected during the course of the study with them. By implementing a spreadsheet based derivation of the likely stock level, which was entered each month, the IPC Model was able to produce fairly meaningful results. What this case shows is that whilst a poor accounting system and inadequate IT infrastructure may be a barrier to adoption, if the owners of the business are prepared to make changes, then the impediment is alleviated leading to possible future adoption.

In the Fitness Studio case, although the accounting system was in relatively good shape, changes were made that enabled the IPC Model to be used more effectively and adoption followed.



### 6.3.3.3 Management by Feel

In three of the cases, their management practices could best be described as managing 'by feel'. Although they were measuring some key factors, particularly sales revenue and sales volumes their measure of profitable trading was not there at all.

The question to ask is when a business is in this state of poor management control, can the IPC Model together with the assistance of a 'coach' change the management control system in these companies? The experience was with two of the case studies that adoption was not going to happen.

In the case of the Dog Day Care Centre, they were not looking at their accounts each month and did not value the information contained therein.

For the Building Materials Wholesaler, they were in a state of flux, trying to sell one of their businesses and re-organising their management control systems via the overworked office manager. This is not a good environment to consider implementation of the IPC Model.

### 6.3.3.4 Poor Inventory Control

Without an inventory control system in place, it is almost impossible to measure profitability of the business on a regular basis. The inference here is that if the business does not have inventory control, then the IPC Model cannot be implemented.

### 6.3.3.5 Problems with Spreadsheets and Other Software

This sub-concept reflects on the alternatives to the IPC Model. If the alternatives are not satisfying the needs of the small business OM, then does that increase the chance of adoption of the IPC Model as a system specifically designed to meet their needs?

The cases studied did not refer to other similar software. They seemed to think that other such software did not exist and that it certainly did not exist in the format designed for the small business. This is confirmed by the comment from the Fitness Studio OM.

*In my experience there are management systems out there, although as you point out they tend to be designed for bigger enterprises and therefore appear scary and complex to us smaller operators. They tend to be inflexible causing you to adapt your business to fit the system*

On the other hand, all the cases studied made use of spreadsheets. They recognised that spreadsheets had limitations and did not meet their intrinsic needs.

It is also relevant that spreadsheets were being used to augment the information flow to the IPC Model, but in none of the cases (except for one) was there a spreadsheet model in place that had the same functionality as the IPC Model.

This concept is amply illustrated in the Computer Store case where the OM kept a comprehensive spreadsheet financial model – one for each of his stores. Despite this, he was still convinced that the IPC Model was a better tool for him to use. As he commented:

*I understand modelling and the benefits of it but ... there is the negative of the modelling. When I say modelling, it is using spreadsheets. It is really ... they have great flexibility but no control. In other words you can change a cell incorrectly and it can mess up the whole thing.....*

*That is really it. But the negative of that is, you cannot manage that spreadsheet. I can't give you my budgeting spreadsheet and get you to prepare a budget with it. No. This can. Because it is defining things.*

Similarly the Fitness Studio OM was frustrated with using spreadsheets:

*And most of the processes we were working with were what we had available to us. So we had MYOB™. We had Excel™. They were our main programs for working out what we were doing. So we would sit down there and spend – leading up to a Board meeting – and I would spend two solid weeks writing Excel™ programs that dealt with assumptions and forecasts and actuals and they were all inter-related. A massive amount of time.... But still a marked degree of inaccuracy because a lot was assumptions that weren't specific, a lot of assumptions were best guess as they tend to be, but they get better as the year goes by .....*

### **6.3.3.6 Customer Focus and Operating Systems**

This sub-concept arose from observation of the Dog Day Care Centre in particular. They were in start-up mode, growing their business rapidly and expanding the number of outlets from one to three in a relatively short period of time. A cursory observer would say that they were 'running blind' which is a characteristic of startups (Reid and Smith, 2000; Gordon and Miller, 1976; Miller, 1975). Earlier it has been identified that looking at their accounts was not a priority for them.

They run their business on a few key drivers. For example, the number of dogs that can be accommodated in x square metres of warehouse and the \$/day/dog charge out rate are two of their key parameters. Customers pay in advance for a fixed number of visits. They know their rent and key outgoings and that is the essence of their business model. The Dog Day Care centre was concentrating only on the operational aspects of the business.

Tight systems were in place to ensure the care of the dogs is consistent and attends to their needs to be active and have fun. Attention was paid to customer satisfaction in many ways. The customer focus and operating systems are of excellent standard and are a factor in the growth that is being experienced in the business. However, the status of the Accounting System and other IT Infrastructure was found to be poor.

As part of the Action Research cycle, the observer assessment of the situation is as follows:

From the point of view of adoption of the IPC Model, there are two possibilities. The first is that the IPC Model may be of use and of interest if the business was larger or more complex. The second thought is that possibly a 'cash business' as it was referred to by the OM, may not need the sophisticated management control system inherent in the IPC Model.

The argument for the adoption of the IPC Model is for the OMs to upgrade their accounting system and then implement the IPC Model with 'coaching' assistance. Then they can reap the benefit of knowing the profitability status of each of their branches, which will allow them to react positively to changes in their business environment giving added security to the operation of their business.

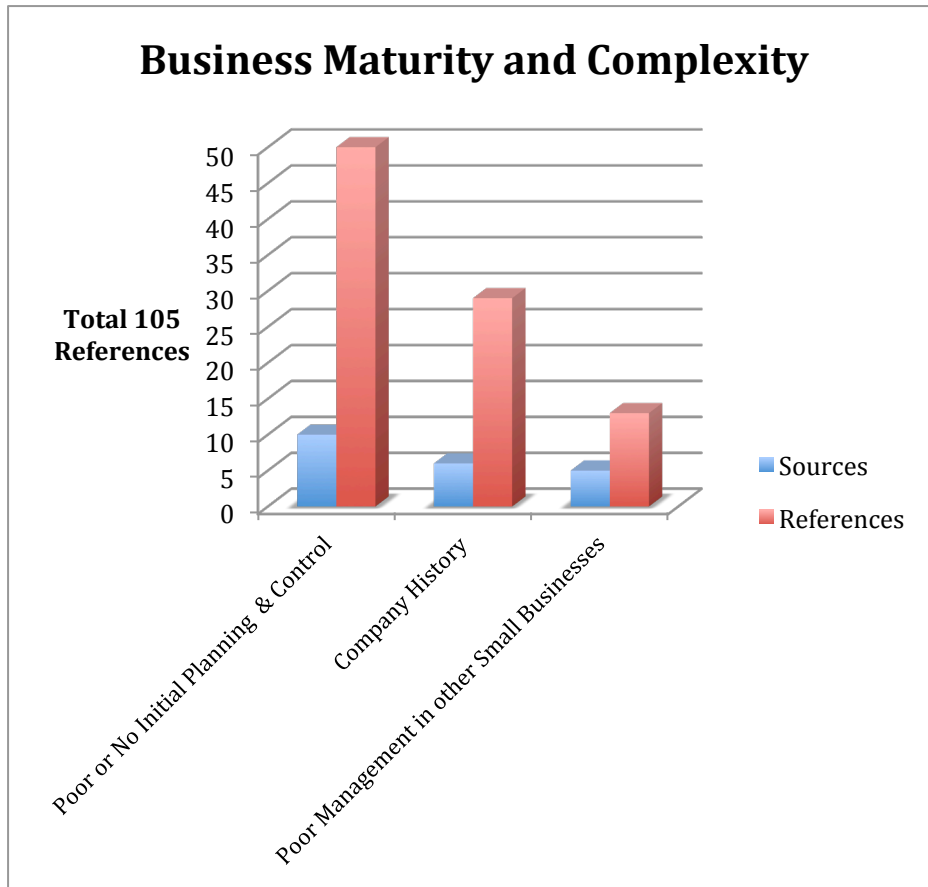
#### **6.3.4 Business Maturity and Complexity**

This concept arose from case experience, particularly those that did not adopt but also in the case of the Fitness Studio who commented that they could not have used the IPC Model in the first two years of their operation. The presumption is that in start up businesses, the need for the OMs to establish operational procedures usually with limited resources and the often chaotic, uncertain environment in which they operate, does not lend itself to contemplative planning and control regardless of how it is implemented.

Another proposition is that there are many small businesses such as the corner shop or in this research, the Dog Day Care Centre, who argue that their business is not sufficiently complex to warrant the use of an IPC Model. As mentioned in the previous section, these businesses are described as ‘cash businesses’ where they provide services or buy-sell a small range of products and their business model is financially quite simple.

As part of the Action Research ‘evaluating’ part of the cycle, the observer would disagree with these two premises proposing a contrary argument saying that establishing a culture of a forward looking mindset and adaptive control is just as important as paying attention to day-to-day operational aspects of the business.

The IPC Model is not size dependent. It operates regardless of the size of the COA that it addresses. It offers to facilitate an important function for the start-up business, in that it helps them learn about the value of information residing in the accounting system and gives them a mechanism through which they can monitor the integrity of the information being recorded. Once that step is in place the process of gaining control of the business and then adaptive control follows naturally over time. Of course the concept does not come to fruition unless there is commitment on the part of the OM.



### **Figure 76 - Business Maturity and Complexity**

Figure 75 above shows the coding density of the three sub-concepts that arose to contribute to the concept of Business Maturity and Complexity impacting on the decision of OMs to adopt the IPC Model. Each sub-concept will be explained in order of strength of coding.

#### **6.3.4.1 Poor or No Initial Planning and Control**

The cases that did not adopt the software in this study were all initially most interested in planning and were aware that they could improve in this area. The factors that precluded their adoption of the software were, in each case due to disorganisation, lack of motivation or poor accounting systems and the fact that there was not the opportunity to demonstrate the value of the IPC Model process for their business. There was not the time available to change the OM's mindset about planning and control for their business. These cases had poor or no initial planning and control function as part of their organisational control.

The Dog Day Care Centre case is an example where the owners were not aware of the mistakes being made by the friend who was doing the bookkeeping for their centres. They were obviously not taking any time to review their accounts each month.

The Building Materials Wholesaler did not have a planning and control function in operation beforehand.

The inference from these two examples is that the owner's mindset about planning and control is negative from the start and that does not bode well for adoption.

#### **6.3.4.2 Company History**

If the company history is short, then the company is classed as a start-up and according to one school of thought (Brinkmann et al., 2010; Kober et al., 2007) the owners would not be inclined to adopt the IPC Model as their management control system. This concept is not supported from the case studies.

There is no evidence that age of business impacts on adoption. The case in point is the Fitness Studio. The mindset of the OM at the beginning was supportive of the planning and control concept. The IPC Model was welcomed as an enabler tool that allowed him to implement the management control system that he wanted.

The Computer Store OM also had a planning and control mindset before introductions to the IPC Model. Whilst he is not fully operational with the software, he is working towards a greatly improved management control system for his business.

The Clothing Store had the right mindset and the owners were keen to install the IPC Model but the system could not be installed in a meaningful way without an inventory control system being in place.

The conclusion to draw from these cases is that OM mindset before being introduced to the IPC Model is more important than the age of the company.

In the case of the Fitness Studio one cannot help but ask what the result would have been if the IPC Model had been implemented at the start? Would they have moved to the brink of insolvency or would their journey have been less bumpy?

#### **6.3.4.3 Poor Management in other Small Businesses**

The Fitness Studio OM had comments to make quite early in the study about the small suburban fitness studios that he was investigating as take-over prospects. (Note that he abandoned this idea when he realised that his best strategy in the short term was to pay off outstanding debt and then consider expansion.) His quotation is revealing:

*The thing that has struck me in looking at two suburban studios already is how limited their ability to plan ahead has been. Never mind planning, they are not even aware of what they have done in the past so is it any surprise that they have been running reactionary businesses. When talking to them it is not as if they are not interested in planning rather they just don't know how to go about it. One of these businesses could not even tell me what their weekly capacity was. How can you plan with no information baseline? Not only that, how can you measure growth in activity and efficiency when you have no baseline?*

*I can now read a balance sheet and tell whether they are faking or whether they are real or how much risk they have got. And unless you have been trained in it formally, it is not an easy thing to do. People look at P&L s and say, oh my god it is a really well off company and they may be a basket case.*

The inference to be drawn from the experience with this study is that probably in practice the maturity and complexity of a business has a bearing on whether the IPC

Model is adopted or not. The barrier is probably the knowledge and mindset of the owner manager.

The counter argument is that there is no logical reason to believe that this needs to be the case. There is no technical reason why the IPC Model should not be of value to even the smallest of businesses provided that they maintain a classical set of accounts. Small businesses have not had access to the IPC Model or similar nor have they access to training in accounting practices.

An interesting example of this point is the current strategy being contemplated by the Fitness Studio OM. He is keen to open another studio in the City as well as separating out the Education part of the business as two additional profit centres.

The first thing he wants to do is to set up budgets and scenarios for the new businesses (or profit centres) in the IPC Model. With these start-ups, he plans to use the IPC Model for scenario development as a first step and then when the businesses begin, start using the IPC Model from the beginning. He has said that this is the best way to monitor performance and keep control of his new ventures. There is no concept that the IPC Model should be used at a later stage in the new businesses development programme.

## **6.4 Summary of Software Related Experiences**

Before developing the theory that emerges from the data collected, in this section a summary is provided of the positive experiences with the software as well as a list of improvements suggested by the Case Study participant. This summary is presented as a dot point list in what follows:

### **Positive Experiences**

- Producing the Business Model was not time consuming. This was facilitated by the inbuilt questionnaire format;
- Importing the Excel™ based Mapping Scheme was a quick seamless process. (This is the stage when the program sets up the internal tables ready for accepting past data and forecasting future data.);
- Editing the Mapping Scheme was easy and error free;

- Importing and processing the Excel™ based Trial Balance data was quick and easy. (12 months of data in about 15 minutes.);
- The forecasting process using the inbuilt Methods was quick and easy. Verification of the particular line item forecast with a confirming graph showing past and future data was well received and assisted the user to judge whether the forecast was realistic;
- The Memo field attached to each line item gave information about the external accounts that were aggregated but the field was also used to record the assumptions made for the particular line item forecast. This feature was well received by users;
- Users liked the flexibility allowed in selection of Performance Measures;
- Users liked the graphical representations of Performance Measures giving both trend lines or moving averages for actual and predicted results. Users preferred using the trend line graphs rather than the moving average graphs; and
- Users preferred to see the progress bar when the program calculated the forward projection of the cash result and the end of the forecasting process.

### **Problems**

- The IPC Model was not used to its full extent by any of the Case Study participants;
- None of the participants forecast their Capital Budget using the IPC Model; and
- Setting up the IPC Model requires knowledge of management accounting. If this not available, the user would need external professional assistance.

### **Software Improvements apparent as a result of the Case Studies**

- The Generic Chart of Accounts embedded in the program was enhanced during the study and will be an evolving list as experience is gained with other users;
- The Predictions Layout showed only predictions (in each line item) during the Cases, which was confusing sometimes. The user had to refer to the graph screen to see the past data. This was later changed to include the actual results



plus predictions in each line but with the facility to roll back the prediction start point if required;

- More clarity was required in labeling of months and years. There was confusion whether the program was requiring financial month/year or calendar month/year data;
- Users needed clearer and more frequent message prompts. These were progressively implemented during and after the study;
- The accounts receivable and accounts payable Methods algorithms were improved to be more intelligent;
- Instructions for completing the Business Model need enhancing. This was later added after the Case Studies; and
- Users suggested that the IPC Model needed to be able to handle Branch accounting with automatic contra accounts and the ability to produce consolidated Financial Reports. This feature was added after the study.

## **6.5 Theory Emerging from the Data**

Finding a theory that emerges from the data collected involves extrapolating the ideas discussed earlier in order to derive some general but plausible principles. It is recognised that there is a limitation to developing theory out of just five case studies. This limitation however is the nature of theory development. The process is to take the data that is available and to develop concepts and relationships that make sense and that should apply if the study was extended to encompass a large number of small businesses.

The aim then would be to test the theory developed here in perhaps a large number of small businesses. Perhaps 50 to 100 businesses would be satisfactory? The likely scenario is that a further study would either confirm the theory as it stands or more likely, the theory would be refined leading to a better understanding of the impact that a software tool such as the IPC Model has on the planning and control function in the small business.

The purpose of this section is to show the analysis techniques that were used to develop the final theory, which is presented in Section 6.5. Diagrams used in this section may seem to be complicated but they are broken down into their elements in order to show how the final

theory was developed. It is a matter of taking a large number of concepts and sub-concepts that have arisen in the data and looking for explanations for relationships between them. The analysis process is explained in what follows in a step-by-step fashion. These are representations of concepts and linkages between concepts and not the final theory. The final theory is developed in Section 6.5.

The theory being developed in this section is based firstly on the **data collected** from the five cases and secondly **on observations and interpretation of the researcher** that may not have spontaneously arisen from comments and opinions of the OMs but may have arisen from the observer's notes and memo and interpretation during this analysis process. If the theory derived this way makes sense and is logical, it is still thought to be of value as it is based on the data collected. The rider is that the theory may be extrapolated to other small businesses but it is likely that with further case study data it would be refined.

There is no reason why the theory would not apply to small businesses in any other country where a standard double entry accounting system is use within the organisation. The only rider to this extension of the theory's applicability is that the IPC Model is modified to account for the particular taxation regimes within each country or jurisdiction.

There is also no reason why the theory should not apply to all types of small businesses, as the IPC Model is generic, and in the author's opinion, all businesses can improve their MCS.

Before stepping through the process of developing the theory that is grounded in the data collected from case study participants, the observations and interpretations of the researcher are important to list for comparison with the following analysis. These are:

- The successful OMs were quite willing to delve into the detail that the IPC Model planning process demands;
- Even with a small level of usage, the IPC Model had an impact on both the OMs and their businesses;
- Both the status and design of the accounting systems in all cases was much worse than expected. The critical nature of having accurate and logical information available for input to the IPC Model became evident;
- The fact that the OM's begin to think differently about their business was important;
- The presence of the software becomes transparent after a while;

- Benefits in having one longitudinal case gave better insights, especially with the change in mindset of the user as time progressed;
- As the cycle of application of the IPC Model is only once per month, it takes quite some time for OM mindset to change and for new strategies to be implemented; and
- Nothing in the study is ‘earth shattering’, unfortunately. The results are what one would hope for. It was satisfying to see the successful application of the IPC Model materialize.

### **6.5.1 Theory Development.**

The process adopted was to look at the commonality of references between the main concepts that have been described above. Where there is a commonality of references between the data comprising each concept, this is referred to as a linkage. Linkages tend to indicate that there may be a reason why a particular set of references is applicable to both of its linking concepts.

What this means in terms of the ‘open coding’ process (described in Section 3.4) is that a piece of text has been associated with more than one concept. When this happens the analysis process involves interpretation as to the reason that may lie behind each of the links between two concepts (there are 11 concepts). It is necessary to decide if the link is causal or if the two concepts are actually the same and therefore should be merged.

Before coming to this part of the analysis, 57 matrices were produced in NVivo™ and transferred to Excel™ for examination. The purpose of these repeated studies was to ensure that the free coding made sense and that any references (coded pieces of text) that were linked (as shown by the matrices produced) to more than one concept made sense. If a reference was really only meant to be coded to one concept then the coding was changed and duplicated references were merged.

As part of the analysis, the detailed sub-concept references described in Sections 6.1 to 6.3 were merged into the 11 main concepts. Figure 77 is derived from the final matrix of the main concepts that was produced in NVivo™. The purpose of the matrix was to examine where the linkages occurred. This matrix is presented in Appendix B. There were 849 references in the merged data set versus 919 in the original data. The reason for the reduction is that the process of merging concepts eliminates duplicate references.

In this section each significant linkage (that has 21 or more references) is discussed and a reason for the linkage postulated. The purpose behind this treatment is to indicate the richness of the data collected and to thoroughly examine the linkages before making a decision as to how some of the concepts should be merged in order to derive a final simplified but valid theory that emerges from the data.

A diagram, Figure 77 (next page) has been developed to show the linkages that evolved out of analysis of the data. The three main themes (Efficacy of the Software, OM Mindset, Factors of Adoption) are shown along the top. (They are coloured purple and labelled.)

Each coloured square represents one of the 11 key concepts that were discussed in Sections 6.1 to 6.3. The concepts are arranged below their main theme names with the most densely coded concepts at the top of the page (coloured yellow) and least densely coded at the bottom (in order green, orange and light grey). The term 'coding density' refers to the number of references allocated to a particular concept or contained in a link. In this analysis, the coding density ranges were 21-30; 31-50; 51-70; 71-100; and > 100. There is a key for these ranges in the matrix table in Appendix B.

In this part of the analysis, the attention is turned from the main concepts and sub-concepts to the linkages. The idea is to examine each of the nine linkages between sub-concepts one at a time to determine their relevance and importance in formulating the final theory of adoption that is presented in Section 6.5.

There is only one relatively strong commonality of references (linkage) arising from the data. That is the linkage between Software Usability and the Forward Looking Mindset of the OM where there were 38 references. There are 8 other linkages shown on the diagram that are all of similar medium strength and comprise 30 or less common references. The remaining linkages are not shown, as they do not contribute significantly to the rationale behind analysis of the data. Note that the linkages are numbered from one to nine with a maroon colour circle. The numbering scheme follows the coding density of the link, with the number one being the highest density and the number nine being the lowest.

In the discussion, which follows each of the linkages, which represent common coding references between concepts, is examined as to whether the link gives credence to a behavioural theory that is emerging from the data..

There is no apology for the complexity of the diagram. It is an attempt to simplify the matrix table that is shown in Appendix B. That table is even more confusing.

Note that in each 'mini diagram' and in Figure 77 the numbers under each concept square represent the number of coding references for that concept. The bracketed numbers in each concept link square represent the number of common references between the linked concepts.

It is not necessary to understand the diagram (Figure 77) as a total concept but rather to concentrate on the inferred meaning or otherwise of the links between concepts that in the end form the basis for the development of the final theory.

The description chosen for each link is derived from the collection of references that it represents. It is a matter of interpreting and summarising the text content.

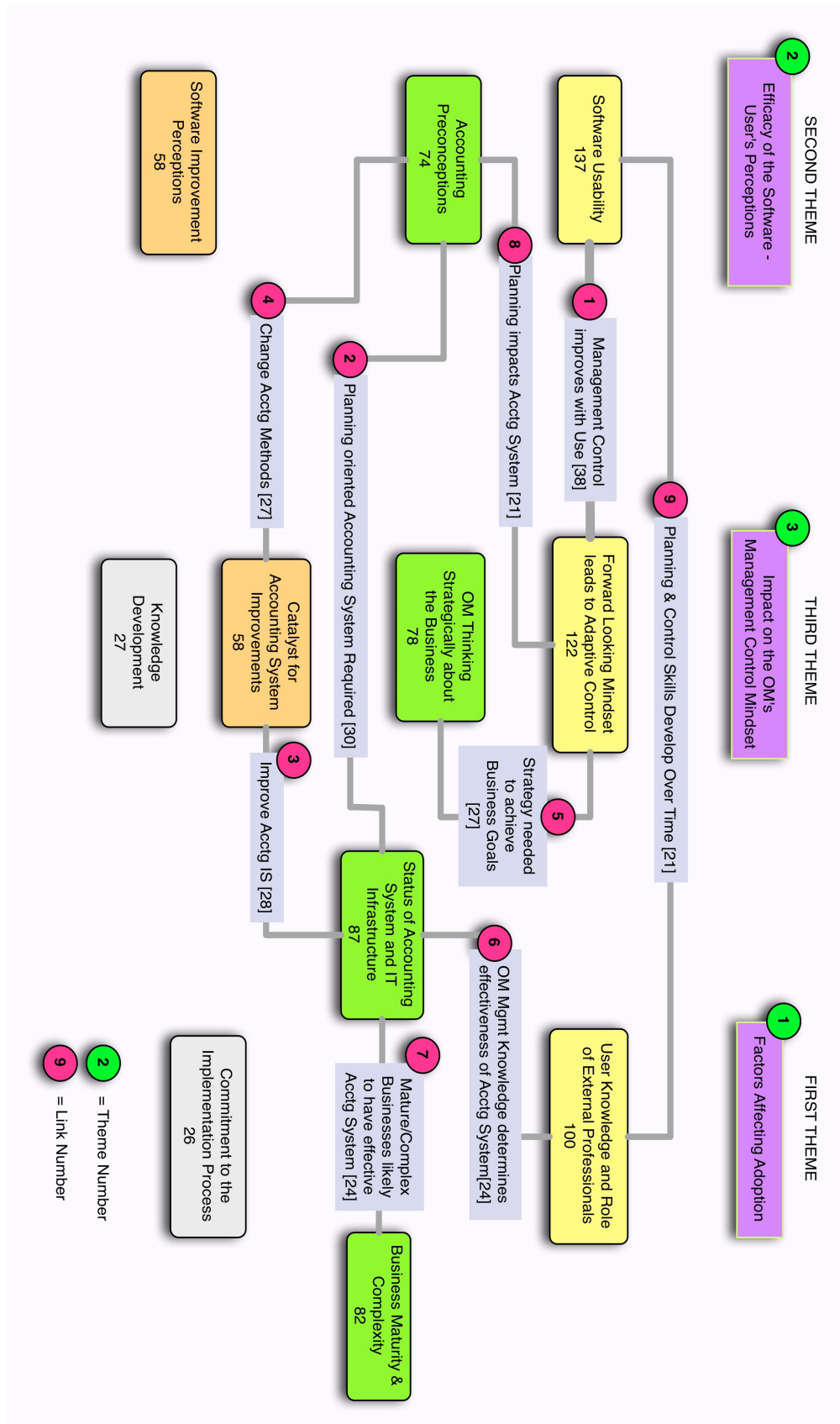
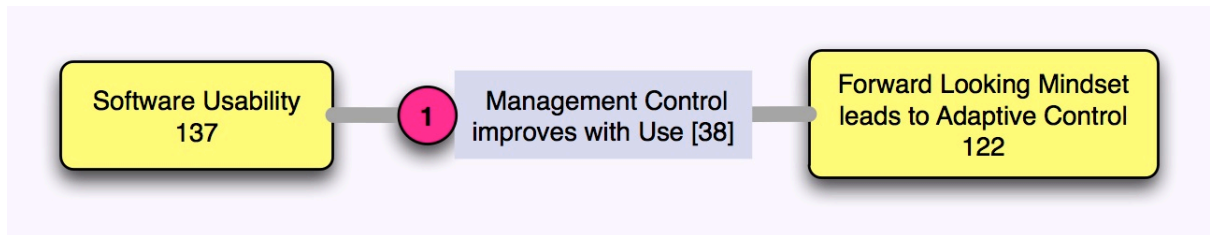


Figure 77 - Concepts Relationship Diagram

**6.5.1.1 Concept Link 1 – Management Control Improves with Use (of the Software).**

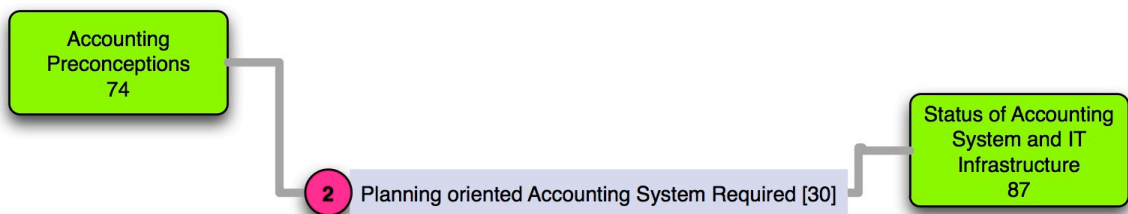


**Figure 78 - Management Control Improves with Use**

The linkage in this case reflects the fact that the OM, in the act of using the software, is making predictions, changing the accounting system and acting on discoveries that emerge from the data. The inference to be drawn from this linkage is that the software is usable and it has the effect of engendering a forward-looking mindset in the OM and as a result, the OM makes changes to the business.

This linkage is comprised of 38 references. The strength of the linkage is 28% the ‘software usability’ concept and 31% of the ‘forward looking mindset’ concept..

**6.5.1.2 Concept Link 2 – Planning Oriented Accounting System Required.**



**Figure 79 - Planning Oriented Accounting System Required**

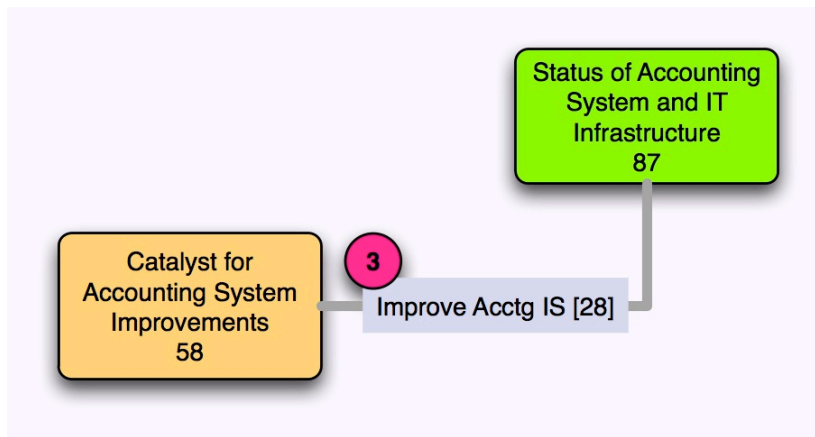
It is not surprising to see a commonality between the concept of Accounting Preconceptions and the Status of the Accounting System. Both these concepts arise from some examples of poor accounting methods that were encountered in the studies. The preconceptions impacted on the IPC Model efficacy theme because the software process requires the accounting system to follow management accounting practice. The status of the accounting system relates to the theme of whether the software is adopted.

The link arises because some of the accounting preconceptions may impinge on the decision to adopt if the OM is not prepared to change those perceptions. The accounting

system needs to be oriented towards planning and business performance rather than simply there to meet taxation and other compliance needs. The accounting system can be designed to cater for both management and compliance needs.

This linkage is comprised of 30 references. The strength of the linkage is 41% the ‘accounting preconceptions’ concept and 34% of the ‘status of the accounting system’ concept.

**6.5.1.3 Concept Link 3 – Improve the Accounting IS.**



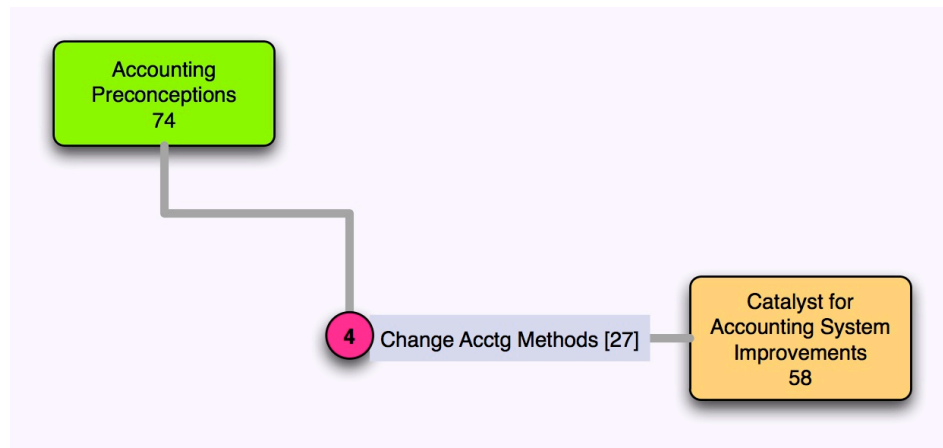
**Figure 80 - Improve the Accounting IS**

There is a relatively strong link between ‘Catalyst for Accounting System Improvements’ arising out of the IPC Model impact and the initial ‘Status of the Accounting System and IT Infrastructure’ that is a factor of adoption. The theme expresses the need for the accounting system IT infrastructure to produce accurate, reliable data otherwise the IPC Model cannot be implemented. This concept refers to the physical functionality of the Accounting IS such as the absence of a POS system that keeps track of sales and inventory.

This linkage is comprised of 28 references. The strength of the linkage is 48% the ‘catalyst for accounting system improvements’ concept and 32% of the ‘status of the accounting system’ concept. .



**6.5.1.4 Concept Link 4 – Change Accounting Methods.**

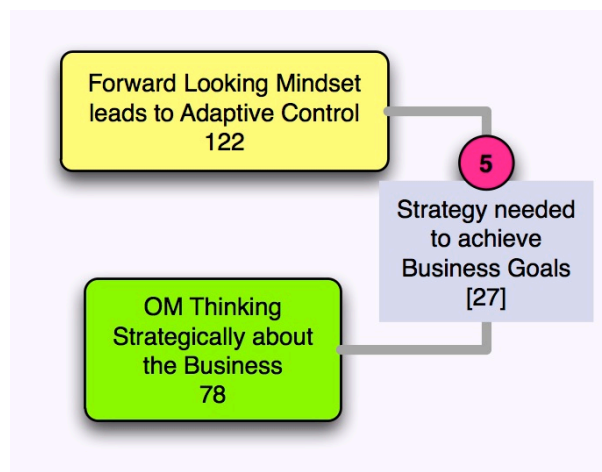


**Figure 81 – Change Accounting Methods**

This link reflects the IPC Model’s influence on changing preconceived accounting methods (‘Accounting Preconceptions’) in order to make the accounting system itself and/or its operation align with the needs of the planning and control function. The IPC Model process is the catalyst for encouraging accounting system improvements. An example is making accounting entries each month for depreciation so that profitability measures are more realistic.

This linkage is comprised of 27 references. The strength of the linkage is 36% the ‘accounting preconceptions’ concept and 47% of the ‘catalyst of accounting system improvements’ concept.

**6.5.1.5 Concept Link 5 – Strategy needed to achieve Business Goals.**

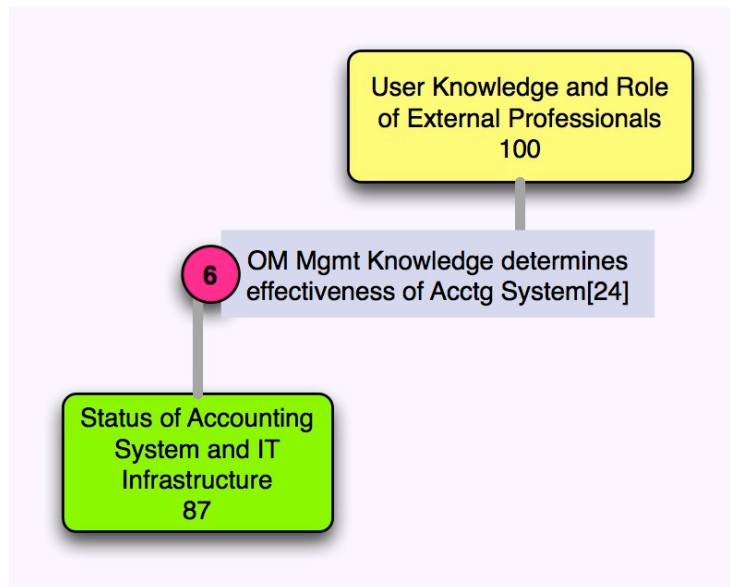


**Figure 82 - Strategy needed to achieve Business Goals**

It is interesting that the concept of the OM Thinking Strategically about the business is not significantly linked to the usability of the Software. Rather it is linked to the Forward Looking Mindset of the OM. It makes logical sense that when the OM has a forward looking perspective and the need to exercise adaptive control from time to time, that this leads to thinking strategically about the business. Looking at the link in reverse, in thinking strategically the OM needs to have a forward-looking mindset.

This linkage is comprised of 27 references. The strength of the linkage is 22% of the ‘forward looking’ concept and 35% of the ‘thinking strategically’ concept.

**6.5.1.6 Concept Link 6 – OM Knowledge vs Accounting System effectiveness.**



**Figure 83 - OM Management Knowledge determines effectiveness of the Accounting System.**

This link is between User Knowledge and the Status of the Accounting System. Since the user is an owner of the company it is logical to assume that there is a relationship between the user’s knowledge and the status of the accounting system.

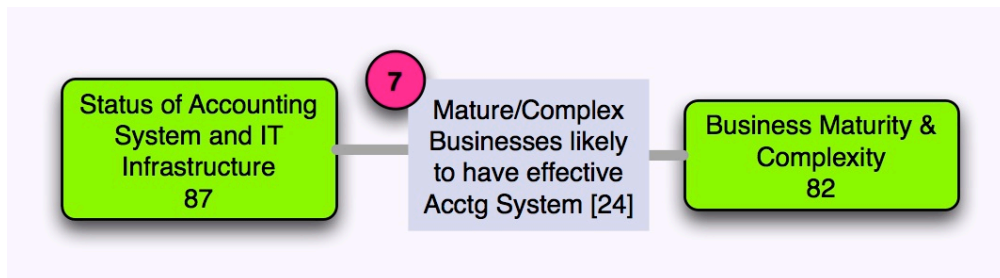
In this case the OM needs to understand the benefits of having a reliable management accounting system. Even if the OM does not have an accounting background or knowledge of accounting, he can make use of professionals in the field to design a suitable accounting system that supports the planning and control function.

Any OM that has a well established planning and control function would need to have a correspondingly well maintained management accounting system. The link therefore

seems to imply that better knowledge would lead to a better designed and maintained accounting system.

This linkage is comprised of 24 references. The strength of the linkage is 28% the ‘status of the accounting system’ concept and 24% of the ‘user knowledge and role of the external professionals’ concept.

#### 6.5.1.7 Concept Link 7 – Mature Businesses vs Accounting System effectiveness.



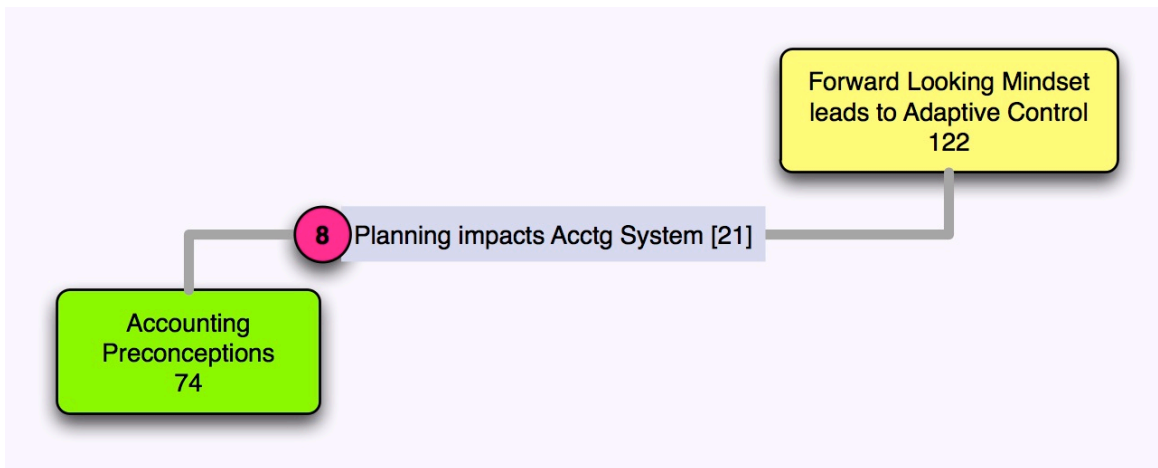
**Figure 84 - Mature/Complex Businesses are likely to have effective Accounting Systems.**

The longitudinal case study provided the opportunity to observe the business maturing and to note that the OM took action to improve the accounting system. The more complex a business is, the more need there is for the accounting system to support decision making. This implies that the accounting system is likely to become increasingly sophisticated with business maturity.

This link supports the idea that mature and/or complex businesses are more likely to adopt the IPC Model than start ups and poorly managed businesses. The initial status of the accounting system is likely to be acceptable, which is a key factor leading to eventual adoption.

This linkage is comprised of 24 references. The strength of the linkage is 28% the ‘status of the accounting system’ concept and 29% of the ‘business maturity and complexity’ concept.

**6.5.1.8 Concept Link 8 – Planning Impacts the Accounting System.**



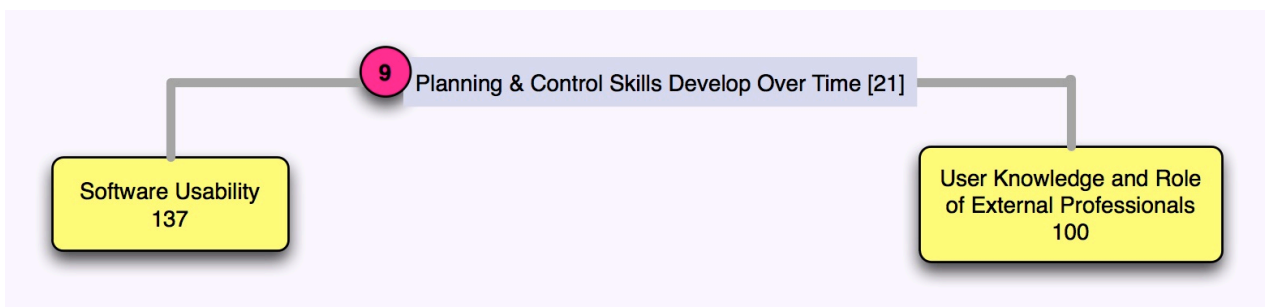
**Figure 85 - Planning Impacts the Accounting System**

On the surface the link does not seem to make sense. However, on examination of the common references, it is clear that the act of forecasting is actually proving some of the preconceptions to be unfounded.

The inference here is that ‘forward looking mindset’ has the effect of changing ‘accounting preconceptions’, which in turn impacts the accounting system. The need to plan ahead was shown to force the user to reconsider their accounting preconceptions that inhibit producing realistic financial forecasts. As the accounting system improves, the level of use of the IPC Model improves and along with that, the likelihood of adoption increases.

This linkage is comprised of 21 references. This link represents 28% of ‘accounting preconceptions’ concept and 17% of the ‘forward looking mindset’ concept.

**6.5.1.9 Concept Link 9 – Planning and Control Skills Develop Over Time**



**Figure 86 - Planning and Control Skills Develop Over Time**

There is a two-way logical flow of ideas with this linkage. One way the user is initially knowledgeable about the planning and control functions and is probably computer literate (Computer Store OM) which predisposes that person to view the software as usable and effective. This interpretation could also apply if the OM is helped with the use of the software by a consultant or business coach.

The other way of interpreting this linkage is to imply that usable, functional software leads to an increase in user knowledge. With practice the user becomes more adept at planning. The feedback mechanism provides insights into control measures that can be implemented. Positive experience with the process increases the user's knowledge of planning, control and the value of the accounting system.

Examination of the common references indicates that the inference to be drawn is that using the software has a learning effect for the user. The learning is one of increasing operational skills with the software not so much the changing of conceptual ideas.

This linkage is comprised of 21 references. The strength of the linkage is 15% the 'software usability' concept and 21% of the 'user knowledge and role of external professionals' concept.

### 6.6 IPC Model Adoption Theory

Finally this analysis draws together the themes and concepts developed above to present the key features of the emergent grounded theory. This is presented diagrammatically in Figure 87 that follows. The theory has been named the “IPC Model Adoption Theory”.

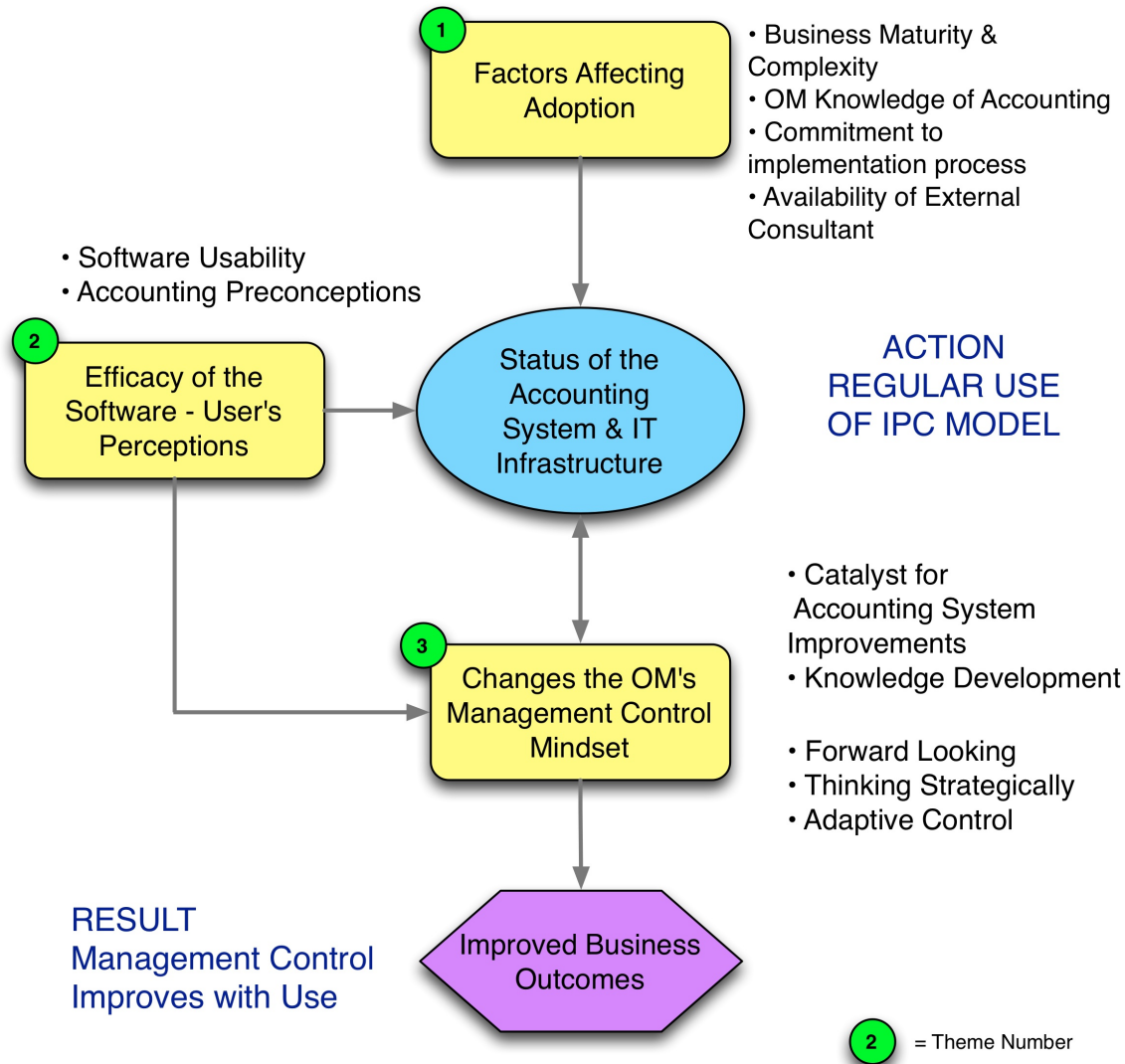


Figure 87 – IPC Model Adoption Theory

The theory is derived from the three basic themes that have been developed earlier. For convenience, these have been numbered (green circles) as shown in Figure 87. There are two additional themes that are derived from the researcher’s summary analysis of the data.

The first additional theme is comprised of several prior concepts - that of the importance of the Status of the Accounting System and IT infrastructure. The Factors Affecting Adoption and the Efficacy of the Software both impact on the Accounting System.

The theory logic is that if the Accounting System is providing accurate and management accounting oriented data, then with regular use of the IPC Model, the OM's Management Control Mindset changes to forward looking and performance oriented.

The result expected with regular use of the IPC Model is the second additional theme - that management control improves and with that improvement, business outcomes are expected to improve.

Each theme in the IPC Model Adoption Theory is described separately in the following sections.

Note that in the diagram (Figure 87) directional arrows indicate a logic flow connecting the themes. The flow between the Status of the Accounting System and Changes to the OM's Mindset is bi-directional.

### **6.6.1 Factors Affecting Adoption - Theme 1**

The theory addresses four main factors that were found to influence whether the IPC Model was adopted or not. The interrelationship is shown to link to the status of the accounting system and the existing IT infrastructure and was not linked to the efficacy of the software. This is an important finding.

The study has shown and therefore the theory developed shows that the status of the accounting system is critical to achieving adoption. In the case where the accounting system is deficient adoption will not occur. Adoption may occur if the OM is willing to make changes to the accounting system and to bring it to a standard that is sufficient to support the IPC Model.

Figure 88 below is extracted from the Concepts Relationship Diagram developed in Section 6.5. Note that in this diagram the concept linkages have been made directional.

This diagram provides support for the statements above. The four concepts affecting adoption are:

- Business Maturity and Complexity;
- Status of Accounting System and IT Infrastructure
- OM Knowledge and Role of External Professionals; and
- Commitment to the Implementation Process.

Note how the concept linkages (numbers two, three, six and seven) lead to the Status of the Accounting System and IT Infrastructure. This is indicating the importance of this concept in achieving adoption of the software. In the IPC Model Adoption Theory (Figure 87) the Status of the Accounting System concept moved up to being a key Theme of the theory. Thus the three remaining concepts only are discussed in this section.



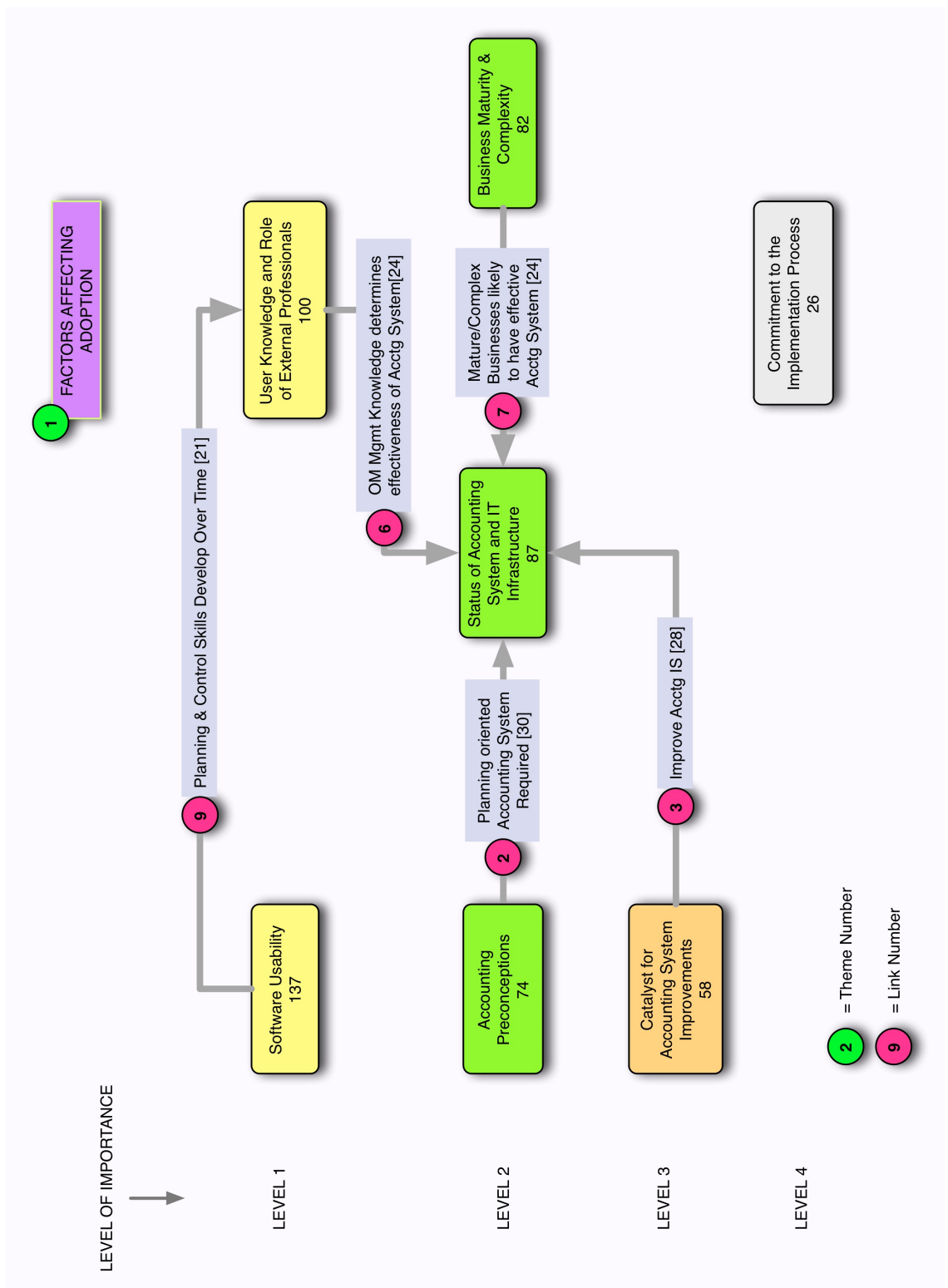


Figure 88 – Theme 1 - Factors Affecting Adoption - Concepts Relationship Diagram

**The first concept**, User Knowledge and Role of External Professionals is shown in Figure 88 as having Level 1 importance. If the OM has a good knowledge of accounting, implementation of the IPC Model will be quick. Without knowledge of accounting, the OM needs to learn how to plan and how to interpret accounting reports specific to his/her own business. In this case the availability of an external consultant could provide the necessary training. With assistance, reaching the required knowledge level is quite possible and the IPC Model acts as a catalyst to facilitate this process.

**The second concept**, Business Maturity and Complexity tended to indicate that the more mature and more complex a business the more it is likely to adopt the IPC Model or similar. The reason for this is that the mature/complex business is more likely to have a well organised accounting system and supporting IT/IS Infrastructure that is needed to support the IPC Model. Hence the directional link to the concept Status of the Accounting System and IT Infrastructure. The MCS tends to grow and develop as the business develops over time (Davila, 2005; Davila et al., 2008; Sandino, 2007; Simons, 1995). Whilst this premise is a factor in adoption it is not a critical factor. This is represented in Figure 88 as the link number seven.

Another view is that there is no technical reason why the IPC Model cannot be installed in a start up business. It is just a matter of making sure that the accounting system is appropriate from the beginning. In some ways, starting a business with the IPC Model and an associated suitable accounting system may provide a solution to the problems of chaos and lack of control widely reported as the norm for new or immature businesses (Akroyd and Kober, 2010).

The third concept, deals with Commitment to the Implementation Process. Without a commitment from the OM, the software tool is unlikely to be adopted. Trying to implement the IPC Model via a bookkeeper or consultant without OM involvement was shown to be ineffective and adoption is unlikely to occur. After all, the program is designed to be a tool for the OM not others in the organisation. Note in Figure 88 that Commitment is a Level 4 concept and that it does not link to any other concept.

It is not surprising that the use of a consultant has arisen as a concept affecting successful adoption of the IPC Model. It is not so much the need for instruction in operating the software (although that is desirable) but for the main purpose of the IPC Model (the process) and that is planning, performance measurement, adaptive control

and strategy formulation. The OM can benefit from ‘professional advice’ in these critical areas.

This factor may be critical to successful adoption but the study was not structured to test this assumption rigorously. The researcher from time to time played both roles of observer and consultant. The theme is included in the theory on the basis that it is a reasonable factor supported by some evidence out of the study and other evidence from the literature.

Lussier and Halabi (2010) support this concept. In their small business success/failure model they identified ‘professional advice’ as being one of the top four significant factors contributing to success (next to planning). Robinson (1982) suggests that professional advice is beneficial in the strategic planning area for small businesses.

If the OM is not particularly computer literate the presence of a professional coach or consultant may prevent the phenomenon of the computer “Halo Effect” (Huff et al., 1987) where the plans produced are not scrutinised sufficiently to ensure a realistic approach. *[The ‘Halo Effect’ being a false logic that because the calculated results emanate from a computer program, then they have to be right!]*

It was stated at the beginning of this section that the Factors Affecting Adoption did not depend on the efficacy of the software. The interpretation of the two concepts bridged by Concept Link 9 is that provided that the software has acceptable usability, then the action of regular use enhances the users planning and control skills.

### **6.6.2 Efficacy of the Software – Theme 2**

The IPC Model Adoption Theory (Figure 87) shows two directional links from Efficacy of the Software – User’s Perception to (a) the Status of the Accounting System and IT Infrastructure and to (b) Changes in the OM’s Management Control Mindset. Figure 89 below is extracted from the Concepts Relationship Diagram developed in Section 6.5 and explains how Theme 2 forms part of the IPC Model Adoption Theory. There are three themes that contribute to the interrelationships within the grounded theory being described.

These are:

- Software Usability;
- Accounting Preconceptions; and
- Software Improvement Perceptions.

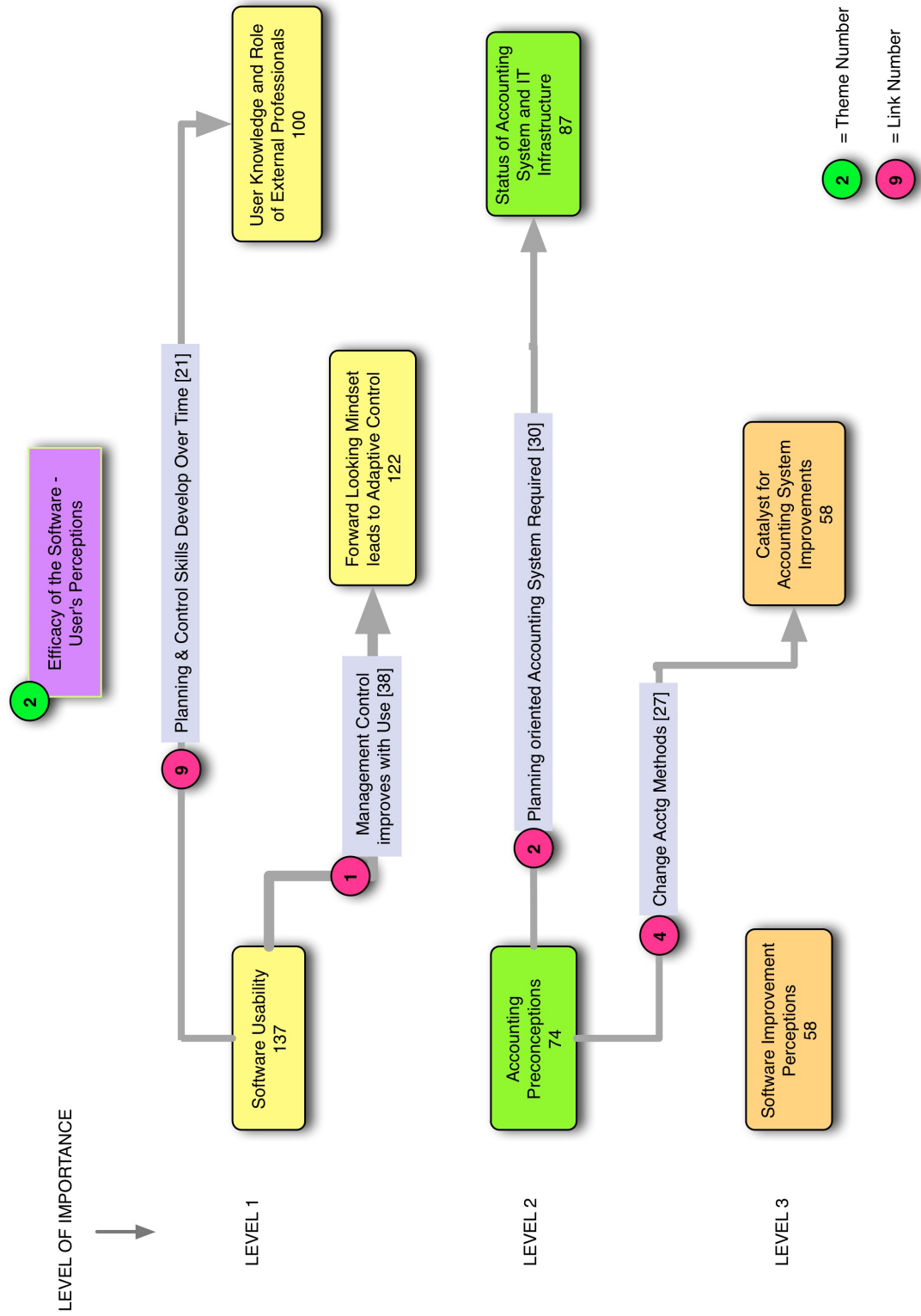


Figure 89 – Theme 2 - Efficacy of the Software - Concepts Relationship Diagram

**The last concept** of Level Three importance is not included in the IPC Model Adoption Theory as it arose specifically with regard to the prototype software used in the study. Users always have improvement perceptions. These perceptions were not related to the software process (the MCS) that is being investigated. Note that the three concepts supporting Theme 2 are shown on the left hand side of the diagram.

**The first concept**, Software Usability leads via Links One and Nine, to Forward Looking Mindset and User Knowledge. It must be assumed from a theory development perspective that the software performs as designed and thus the result of regular use leads to Changes in the OM's Management Control Mindset which becomes forward looking and user knowledge improves. The data collected confirmed the assumption – the software did perform as designed – and the directional links were developed during the analysis. Thus in the IPC Model Adoption Theory (Figure 87) the directional link between Themes 2 and 3 is explained.

This link explains that the regular use of the IPC Model leads to improved management control, a forward looking mindset and adaptive control of the business.

**The second concept**, Accounting Preconceptions leads via Links Two and Four to Status of the Accounting System and Catalyst for Accounting System Improvements. The meaning of this link is interpreted as the OM having Accounting Preconceptions before the intervention of the IPC Model. If the user perceives the software's efficacy for the planning and control function, the with use the need to ensure a planning oriented accounting system and effect changes to the accounting system will arise.

Thus in the IPC Model Adoption Theory (Figure 87) the directional link between Theme 2 and the Status of the Accounting System is explained. Accounting preconceptions are changed as a result of regular use of the IPC Model.

### **6.6.3 Changes in the OM's Management Control Mindset – Theme 3**

The IPC Model Adoption Theory (Figure 87) show two interrelationships that lead to changes in the OM's mindset. The first is the Efficacy of the Software leads to Changes in the OM's Management Control Mindset – Theme 3 and the second is a bi-directional interaction between Theme 3 and the Status of the Accounting System and IT Infrastructure

Figure 90 below is extracted from the Concepts Relationship Diagram developed in Section 6.5. There are four main concepts that that contribute to the two interrelationships in Theme 3. Note that in Figure 90 the four main concepts are shown in the middle of the diagram.

These are:

- Forward Looking Mindset Leads to Adaptive Control;
- OM Thinking Strategically about the Business;
- Catalyst for Accounting System Improvements; and
- Knowledge Development.

These are the concepts that are noted in the IPC Model Adoption Theory (Figure 87).

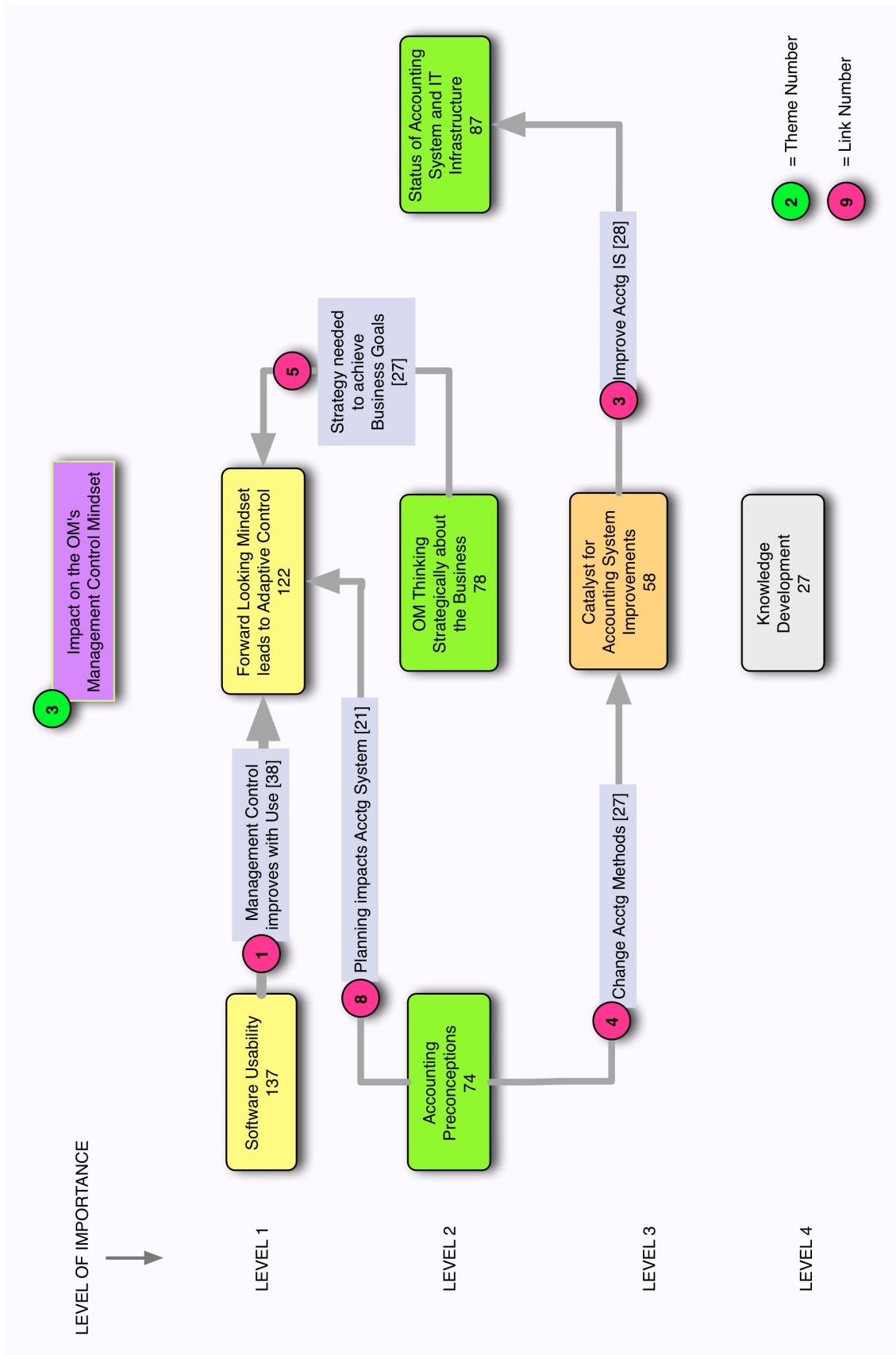


Figure 90 – Theme 3 - Changes in the OM's Management Control Mindset - Concepts Relationship Diagram



**The first concept** is that the software tool encourages a forward-looking mindset. With regular use, the user becomes increasingly adept at planning and tends to think increasingly long term about the business. The software also enables the OM to look at the financial aspects of the business in a reduced format that is more conducive to the planning function. Graphical representation of all GL Line Items allows for trends to be observed rather than reactionary response to current month's data. With performance measures being available in the IPC Model, the OM can exercise 'adaptive control' to improve business outcomes. This is another mindset change based firstly on the concept 'continuous adaptation'. This is the process of continually adjusting the predictions when actual data becomes available as opposed to keeping the original budget and simply noting performance against that budget.

When a control measure is taken in the business the OM, having a forward looking mindset can predict the outcome of the control measure before it is implemented. When results are available the initial outcomes may or may not be as predicted. If the control measure did not result in the outcomes required, then either the control measures need to be changed or the predictions need changing.

Thus the IPC Model recognises the concept of predictions having 'relevance decay' as time progresses. This is why the process encourages the continuous and frequent revision of predictions as appropriate ['continuous adaptation'] in order that the OM can steer the business towards desired goals.

**The second concept** is that the user having an effective means to make predictions naturally begins to think strategically about the business. The availability of an easy to follow format for articulating the business model sets the overall goals and strategic positioning for the business from which the ideal performance targets are set. If the IPC Model is being used regularly each month, it is almost impossible for the user not to think strategically about the business.

**The third concept** is that regular use of the IPC Model acts as a Catalyst for Accounting System Improvements. This in turn impacts on the Status of the Accounting System and IT Infrastructure.

**The fourth concept** is that of Knowledge Development. OM's in time learn how to implement the inbuilt MCS process. The data reveals many instances where the OM gains knowledge about the business and the dynamics of its financial model.

An important knowledge development aspect that the researcher observed was the OM's steady awareness of "process discipline" advantages. Process discipline is to do with maintaining the monthly processing cycle and not allowing the cycle to lapse in time. When a business is tracking along largely according to the predictions and business conditions are stable, the tendency is for the OM to miss a month or two of the processing cycle. This break in the process has two effects. One is that it is possible that an adverse trend in one area of the business goes unnoticed. The second is that the effectiveness of the control mechanism relies on the making small incremental changes as in 'continuous adaption'. When the performance monitoring is delayed the control effectiveness becomes weaker.

#### **6.6.4 Status of the Accounting System and IT/IS**

##### **Infrastructure**

The research has shown that central to the theory is the businesses' Accounting System and associated IT/IS infrastructure. The design of the accounting system and its up-to-date and accurate maintenance is critical for the achievement of successful management control in the small business.

The impact of the IPC Model was to influence both accounting methods and the design of the accounting system for planning and control purposes. (Refer to Status of the Accounting System and IT/IS Infrastructure at the centre of the diagram (Figure 87)).

Both the themes Factors Affecting Adoption and Efficacy of the Software impinge on the Status of the Accounting System and IT Infrastructure as explained in the previous three sections. The MCS process embedded in the IPC Model has the effect of changing the OM's Management Control Mindset. This outcome is influenced by the status of the accounting system that needs to provide the necessary data for effective management control. On the other hand the IPC Model influence on the OM's mindset encourages improvements in the accounting system. There is a two-way relationship that emphasises the importance of maintaining relevant accounting records suited to management control.

#### **6.6.5 Improved Business Outcomes**

The theory (Figure 87) implies that there is an interrelationship between the Changes in the OM's Management Control Mindset and Improved Business Outcomes. Once the

OM's mindset is oriented to planning and control, is forward looking and adaptive control is being applied, business outcomes are expected to improve.

The Tables 15 to 19 below provide qualitative evidence of the degree to which business outcomes improved in each of the Case Studies.

Concepts	State Zero (Before Intervention)	State One (After Intervention)
<b>CASE 1 – FITNESS STUDIO</b>		
<b>Accounting Preconceptions</b>	The OM was relying on his accountant who did not structure the accounts for planning and control purposes. No separation of fixed and variable costs. No profit measurement by product group.	Mapping scheme allowed for alteration to accounting system presentation to measure fixed and variable costs and product group profit measurement.
<b>User Knowledge and Role of External Professionals</b>	OM's knowledge of accounting was poor with respect to the balance sheet. Was not using performance measures. External professional was the accountant.	Knowledge increased with use of program. Started to measure Gross Profit and use performance measures.
<b>Status of Accounting System and IT Infrastructure</b>	Accounting system was satisfactory. Relevant data was available.	Employed a bookkeeper to allow more time for strategy development, planning and control.
<b>Business Maturity and Complexity</b>	Business was relatively young.	Business matured with intervention and became more professionally managed. MCS successfully implemented.
<b>Catalyst for Accounting System Improvements</b>	Accounting system was poorly set up for planning.	OM made changes to the accounting system to provide more relevant data.
<b>Knowledge Development</b>	Theoretical knowledge of MCSs.	Knowledge of implementing a practical MCS increased.
<b>OM Thinking Strategically</b>	Thinking tactically.	Much more strategic thinking.
<b>Forward Looking Mindset</b>	Yes but without the support of hard data and thus concepts were sometimes in error.	Developed a forward looking mindset supported by hard data.
<b>Software Usability</b>	Not using.	Liked the software. Adopted the software.
<b>Software Improvement Perceptions</b>	No perceptions.	Suggestions for improvement made during the study.
<b>Commitment to the Implementation Process</b>	Committed.	Maintained commitment.

**Table 15 - Case 1 Fitness Studio - Summary of Business Outcomes**

**In Case 1** – the Fitness Studio had positive business outcomes as a result of the intervention. Further positive effects are expected with continued use of the IPC Model.

Concepts	State Zero (Before Intervention)	State One (After Intervention)
<b>CASE 2 – DOG DAY CARE CENTRES</b>		
<b>Accounting Preconceptions</b>	Accounting was not being given much focus. Possibly the OM was looking at the P&L but certainly not the Balance Sheet. A relative remotely located from the business was doing the bookkeeping.	OM became more aware that the accounting mattered and as a result of the intervention had the books vetted and maintained by an accountant.
<b>User Knowledge and Role of External Professionals</b>	User had a business degree and was an engineer. Business consultants not used.	Awareness of the software and its functions.
<b>Status of Accounting System and IT Infrastructure</b>	Poorly and inaccurately maintained.	Changed the accounting system. Eliminated inaccuracies. Sought professional help.
<b>Business Maturity and Complexity</b>	Immature, start up.	Immature, start up. Did not seem to be predisposed to implementing an improved MCS with formal financial planning, performance measurement and control.
<b>Catalyst for Accounting System Improvements</b>	Accounting system poorly structured for operating an MCS.	Accounting system improvements were made following the intervention. Accounting errors were fixed.
<b>Knowledge Development</b>	Knowledge and skill in operational matters but not able to attend to the formal planning and control function.	OM paid more attention to the accounts.
<b>OM Thinking Strategically</b>	Relatively short term tactical thinking only.	Strategic matters were discussed but plans had only rudimentary financial basis. Expansion plans seemed to be too hurried from observer point of view.
<b>Forward Looking Mindset</b>	Plans in an operational sense but not based on sound financial data.	Became more interested in the financial data.
<b>Software Usability</b>	Not using.	Not using.
<b>Software Improvement Perceptions</b>	No perceptions.	Did not use the software but was cognizant of its function. OM was interested in Branch accounting features.
<b>Commitment to the Implementation Process</b>	Enthusiastic at the beginning but then became uncommitted.	Did not adopt the software.

**Table 16 - Case 2 Dog Day Care Centres - Summary of Business Outcomes**

**In Case 2** – Dog Day Care Centres there were minor improvements from the intervention. The OM became more aware of the importance of accurate and timely accounting information when shown the past data output from the IPC Model. He became cognisant of the benefits of planning and took action to improve the situation. This positive action was a small step forward towards an improved MCS.

Concepts	State Zero (Before Intervention)	State One (After Intervention)
<b>CASE 3 – CLOTHING STORES</b>		
<b>Accounting Preconceptions</b>	Using spreadsheets to collect sales data and then enter into accounting system instead of installing a POS system. Did not have an inventory control system. Accounting system not delivering useful data needed for effective planning and control.	Understood why it was necessary to install a POS system and to accurately record inventory status.
<b>User Knowledge and Role of External Professionals</b>	Relied on advice of their accountant who did not help with the link between the accounting system and management.	Understood that their accounting system needs to be the anchor to improved management of their business.
<b>Status of Accounting System and IT Infrastructure</b>	Accounting data was well kept and up to date. It is just that it was not being used as a source of data for management purposes.	Minor improvements in accounting system achieved.
<b>Business Maturity and Complexity</b>	Mature business. Not complex.	No change.
<b>Catalyst for Accounting System Improvements</b>	Poor state of accounting system. Hard for owners to understand its meaning.	Accounts were changed to reflect true and more understandable status of the business.
<b>Knowledge Development</b>	Owners not knowledgeable about MCSs and how they are implemented in a practical way.	Increased knowledge of the owners about MCSs and in the practical application of planning, performance measurement and control.
<b>OM Thinking Strategically</b>	Thinking in a tactical sense.	Started to think strategically but lacked the hard data basis for decision support.
<b>Forward Looking Mindset</b>	Somewhat forward looking especially with regard to purchase of stock for the coming fashion seasons. Were sensitive to customer needs.	Realised that they needed to be more forward looking in other areas of the business. They understood that they could be more profit oriented.
<b>Software Usability</b>	Not using.	Liked using the software. Wanted to adopt after they had made the investment in a POS system.
<b>Software Improvement</b>	No perceptions.	No particular software

Concepts	State Zero (Before Intervention)	State One (After Intervention)
<b>Perceptions</b>		improvements suggested.
<b>Commitment to the Implementation Process</b>	Committed.	Maintained commitment.

**Table 17 - Case 3 Clothing Stores - Summary of Business Outcomes**

**In Case 3** - Clothing Stores there was an improvement in the OM’s knowledge of accounting and how the data can be used to effect improvements in Management Control. The OMs began the process of improving their accounting system and establishing POS and inventory control. They were keen to adopt the IPC Model once their accounting system was in order.

Concepts	State Zero (Before Intervention)	State One (After Intervention)
<b>CASE 4 – BUILDING MATERIALS WHOLESALER</b>		
<b>Accounting Preconceptions</b>	Accounting system was being upgraded. There was no formal inventory control system.	External (temporary) inventory control system using Excel spreadsheets was implemented.
<b>User Knowledge and Role of External Professionals</b>	User was a knowledgeable bookkeeper. Used external business consultant and accountants.	Increased awareness of the disciplines involved in an effective MCS.
<b>Status of Accounting System and IT Infrastructure</b>	The accounting system was in disarray and the IT infrastructure was out of date.	No change during study period.
<b>Business Maturity and Complexity</b>	Young business going through a rapid change process including a restructure.	The business was becoming more complex and the financial systems were lagging behind.
<b>Catalyst for Accounting System Improvements</b>	Accounting system disorganized and inaccurate. Accountants were asking many questions.	The case for simplifying the accounting treatment of sales was being considered. New in house bookkeeper was making changes.
<b>Knowledge Development</b>	Not familiar with the concepts of implementing an MCS in a small business.	Through discussions was able to see how the IPC Model could be of benefit but was impeded by the circumstances in the business at the time.
<b>OM Thinking Strategically</b>	Not thinking strategically.	No change.
<b>Forward Looking Mindset</b>	Short term view.	No change.
<b>Software Usability</b>	Not using.	Found creating the Business Model and forecasting to be easy. Could see the value of the process.

Concepts	State Zero (Before Intervention)	State One (After Intervention)
<b>Software Improvement Perceptions</b>	No perceptions.	Had unrealistic expectations. Was inclined towards the mythical expert system, expecting results without the necessary effort or the availability of sound financial data.
<b>Commitment to the Implementation Process</b>	Initially committed.	Initially enthusiastic but when bringing accounting data up to an acceptable, realistic standard became a time consuming effort became uncommitted. Study time schedule was a barrier. Did not adopt the software.

**Table 18 - Case 4 Building Materials Wholesaler - Summary of Business Outcomes**

**In Case 4** – Building Materials Wholesaler there was little evidence of improved business outcomes. Possibly an increased awareness of the deficiencies in their current MCS was a benefit. They really were not sufficiently committed to implementing the software to be able to realise improved business outcomes.

Concepts	State Zero (Before Intervention)	State One (After Intervention)
<b>CASE 5 – COMPUTER STORES</b>		
<b>Accounting Preconceptions</b>	Did not think that depreciation was important to be accounted for monthly. Ideas on planning the Balance Sheet were different. Loan accounts between stores were not accurately operating as contra accounts each month.	Concurred that the IPC Model process for planning the Balance Sheet was better. Was changing view that more frequent monitoring of business performance was better.
<b>User Knowledge and Role of External Professionals</b>	OM is a chartered accountant. External business consultants were not used.	Recognised the need for better recording of stock and cash transfers between stores but did not implement during study.
<b>Status of Accounting System and IT Infrastructure</b>	Excellent infrastructure. POS and MYOB manually integrated. Using spreadsheet based planning system.	Considered IPC Model a better planning tool than the spreadsheet system. Spreadsheet system took a lot of time to maintain.
<b>Business Maturity and Complexity</b>	Start up business expanding.	No change.
<b>Catalyst for Accounting System Improvements</b>	Accounting system was maintained in a satisfactory manner.	IPC Model showed up minor flaws in the accounting system. GST remaining in branches distorted actual cash position. Contra accounts not handled correctly in

		earlier months. Problem corrected.
<b>Knowledge Development</b>	Well acquainted with management accounting principles and MCSs.	Learned about a different way of planning and thought cash flow predicting in IPC Model was a more accurate and easier approach. Knowledge of the MCS process within the IPC Model increased.
<b>OM Thinking Strategically</b>	Thought tactically.	Actual performance measures for inventory turnover were higher than expected. Worked on strategy to correct the problem.
<b>Forward Looking Mindset</b>	Yes, but relatively short term.	Improved. Longer term view. More frequent monitoring required.
<b>Software Usability</b>	Not using.	Found it easy to use. Understood the process and quickly implemented the software for the primary store. Was intensely interested in performance measurement process.
<b>Software Improvement Perceptions</b>	No perceptions.	Wanted Branch accounting and consolidation routines added. The IPC Model Generic COA had to be augmented.
<b>Commitment to the Implementation Process</b>	Committed.	Adopted IPC Model for Head Office store. Wanted to extend to other stores after the study.

**Table 19 - Case 5 Computer Stores - Summary of Business Outcomes**

**In Case 5** – Computer Stores improved business outcomes for all stores were not achieved in the time frame although the OM was enthusiastic about progress being made with the head office store. Information produced by the IPC Model was useful in alerting the OM to operational improvements that could be made. For example, he implemented improved inventory control as a result of the IPC Model information and made adjustments to his accounting system.

## 6.7 Enfolding the Literature

In this section the IPC Model Adoption Theory (Figure 87) developed in the previous section and the experience from the case studies is compared with the literature and the analysis of the literature that was discussed in Chapter 2.

The aim in developing the IPC Model was to provide a software tool that would assist small businesses to be much more aware of their financial performance and through a MCS process embedded in the software act as a catalyst to improve performance. This aim



presumably leads to business success. However, in Chapter 2 examination of the literature led to the conclusion that “success” is assessed in different ways depending on the goals of the OM. Regardless of the type of “success” a business achieves, no one would argue against the idea that the business must be sustainable or as Reid and Smith (2000, p168) suggest ‘the firm must pass the long-run test of economic survival’.

Many authors reported that those businesses using Formal Planning and Control (FPC) techniques tended to be the ones that were successful in terms of growing and being profitable. They tended to be larger businesses where management practices were more formally arranged (Kraus, 2006; Romano and Ratnatunga, 1994; Gerber, 2001; McMahon, 1999, 2001; Nogare, 2006; O'Neil, 1986; Perera et al, 2007; Wijewardena et al, 2004; Jänkälä, 2005; Sandelin, 2008). Those authors that studied small businesses showed that using a FPC system contributed to growth and profitability (Brinckmann et al, 2004; Gumbus and Lussier, 2006; Hudson et al., 2001; and Runyan, 2008).

The literature review showed further that simply employing a FPC system was not the only necessary component of a successful business. This realisation then led to the construction of a Small Business Success Model that was based on the work of Morris et al (2003, 2006) and Schindehutte et al (2008) and supported by the work of Gumbus and Lussier (2006) and Hudson et al., (2001).

### **6.7.1 Small Business Success Model**

The IPC Model Adoption Theory (Figure 87) shows how with the intervention of the IPC Model changes in the OM’s management control mindset occurs which leads to improved business outcomes. It is worthwhile to revisit the conceptual model developed in Chapter 2 to compare the factors that impinge on the success of a small business (the Small Business Success Model (Figure 8, Section 2.1) with the grounded theory developed from results of the research programme. This model is repeated as a reminder (in miniature) in Figure 91 that follows.

The “OM” in this section refers to the subject OM with whom the researcher interacted and/or the other business owners who form part of the OM team. The two or more business owners collectively determine the strategy for the business. As management control involves all the “managers” of the business, then reference to “changes in the OM’s mindset” can refer to the management team as well as the actual participant OM.

The premise of the Business Success Model was that the measure of business success is whether the basic goals of the OM (or OM team) are met. What are the fundamental goals for the business? Is it to generate income, to have managed growth, rapid growth or is the business formed to just provide a particular life style that suits the OM and family. At the other extreme, the business may be a speculative venture where high risks are taken. If the idea takes off there will be exceptional rewards. The fundamental goals of the OM (with regard to the business venture(s)) are a mindset state that drives the business.

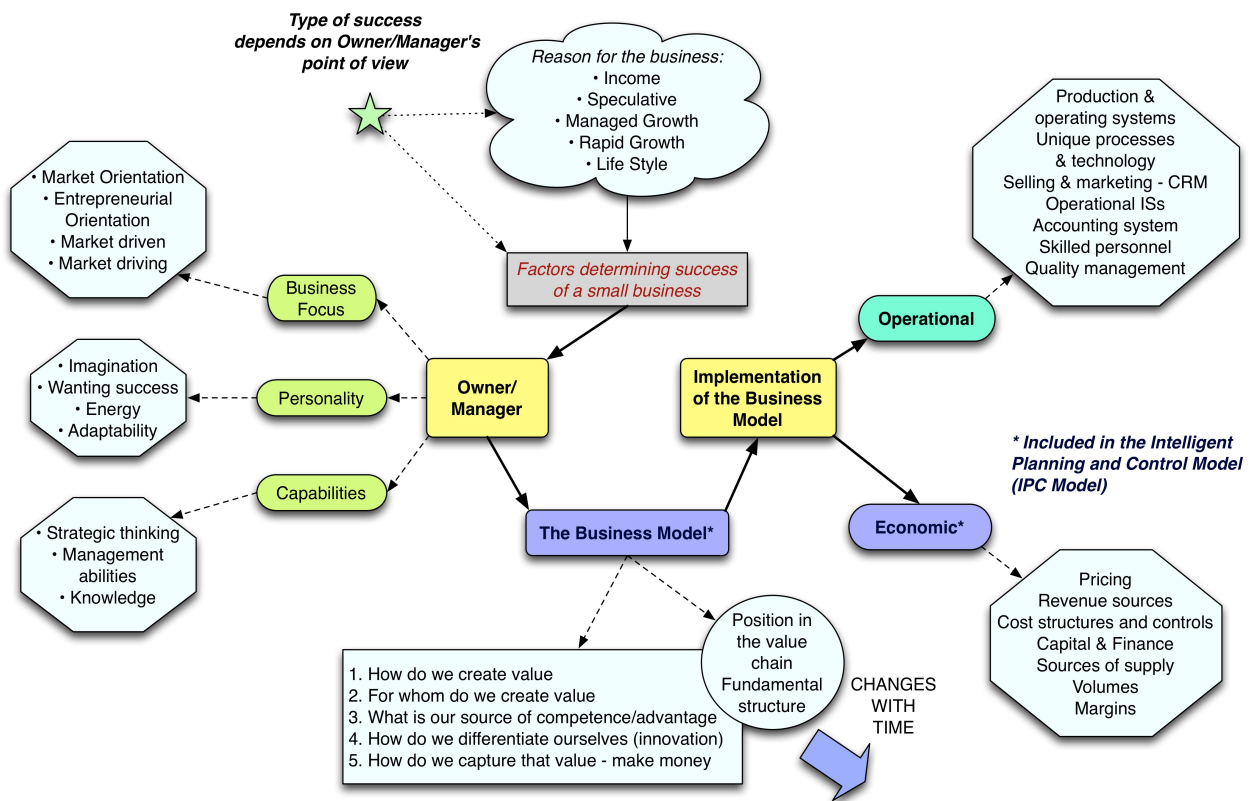


Figure 91 – The Small Business Success Model (Repeated from Section 2.1.4)

In the research cases it was possible to classify their business goals using the model schema. The Fitness Studio and the Clothing Store were interested in managed growth but all the others were experiencing rapid growth and presumably that was their goal – at least in the short term. Whether the rapid growth models were sustainably profitable or not, was not clear.

The Small Business Success Model (Success Model) looks firstly at the characteristics of the OM then considers the business model. If these two factors are known and

presumably acceptable, then the success of the business largely revolves around how well the business model is implemented. Implementation revolves around two basic areas, operational factors and economic factors.

It is now possible to see how the cases studied fit into this model, remembering that the IPC Model focuses specifically on only two areas. These are the business model and the economic implementation of the business model. However when the considering the IPC Model Adoption Theory developed from the research results and shown in Figure 87 above (Section 6.6), there are aspects that tie in with the Small Business Success Model.

### **6.7.2 The Owner-Manager Characteristics**

Research shows that the characteristics, skills and orientation of the OM (or OM team) have a significant impact on business success (Gumbus and Lussier, 2006; Hudson et al., 2001; Schindehutte et al, 2008; Runyan's, 2008; ABS, 2004; Brinckmann et al., 2004).

When it comes to considering the effect of the OM characteristics on business performance the case study situation differed from the literature in some but not all respects.

In all cases there were other owners who supported the subject OM and these owners played different roles in the organisation. The (executive) owners collectively formed the management team. This view of the OMs in the small business is supported in the literature (Gumbus and Lussier, 2006; Hudson et al., 2001; Schindehutte et al, (2008); Runyan's (2008); ABS (2004); and others).

The research was carried out with an OM in all cases except the Building Materials Wholesaler where the research subject was the Office Manager/Bookkeeper. These persons referred to here as the subject OMs were primarily concerned with the management of the business.

Not all owners were interested in being involved in the accounting or IPC Model aspects of the business. The inference was that these persons were nevertheless interested in the overall economic wellbeing of the business. They were certainly interested in the operational aspects of the business.

Table 15 below is an interpretation of the characteristics of the case study OMs following the Small Business Success Model. The last six characteristics in the left hand column were found to be important to the successful implementation of the IPC Model.

The interesting conclusion to draw from analysis of this table is that the favourable OM characteristics that engender success in the small business are also those that predispose to the adoption of the IPC Model. The two adopting companies showed positive characteristics whereas the other that did not adopt rated from average to poor in the ratings.

The subjective rating range used was:

- Low, medium, high for the first two lines of the table;
- Yes or No for the next two lines; and
- Poor, good, medium/average, very good, and excellent for the remainder of the table.

Characteristics of OM Team	Fitness Studio	Dog Day Care Centres	Clothing Stores	Building Materials Wholesaler	Computer Stores
<b>Market Orientation</b>	High	High	High	High	High
<b>Entrepreneurial Orientation</b>	Medium	High	Medium	Medium	High
<b>Market Driven</b>	No	No	Yes	Yes	Yes
<b>Market Driving</b>	Yes	Yes	No	No	No
<b>Adaptability</b>	Very Good	Not Known	Good	Not Known	Good
<b>Accounting Knowledge</b>	Good	Poor	Poor	Poor	Excellent
<b>Strategic Thinking</b>	Very Good	Average	Average	Average	Good
<b>Management Operations</b>	Excellent	Very Good	Good	Poor	Very Good
<b>Management Economic</b>	Very Good	Poor	Poor	Poor	Excellent
<b>Operational IT based MIS Infrastructure</b>	Good	Medium	Poor	Poor	Good

**Table 20 - Interpretation of Owner-Manager Entrepreneurial Characteristics**

It can quite rightly be argued that the ratings in Table 15 are rather subjective. On the other hand it can equally be argued that making a judgement based on the research results and quite long-term interaction with the case businesses is valid. It is simply an interpretation of the situation as seen by the researcher that is being used to show the link between OM characteristic success factors and the IPC Model Adoption Theory. The characteristics and motivations of the OM are key to successful adoption as well as to business success.

Taking the observations further, the inference is that the OMs in the study that did not adopt the IPC Model seem to have a mental model of small business success that is a reduced version of the Small Business Success Model above. This concept is shown in Figure 92 that follows. This model is a representation of what was observed.

It shows the OM focussing on operations and not valuing the benefits that could be obtained by implementing formal planning and control processes. The formal articulation of the business model and the economic factors needed to implement that model, are completely missing from the OM mindset.

The inference here is that the value of information that emanates from a well-designed management accounting system is not recognised. The study revealed that these OMs viewed the accounting system as something that is the province of the accountants who had the responsibility to deal with “the business finances” and all matters relating the taxation.

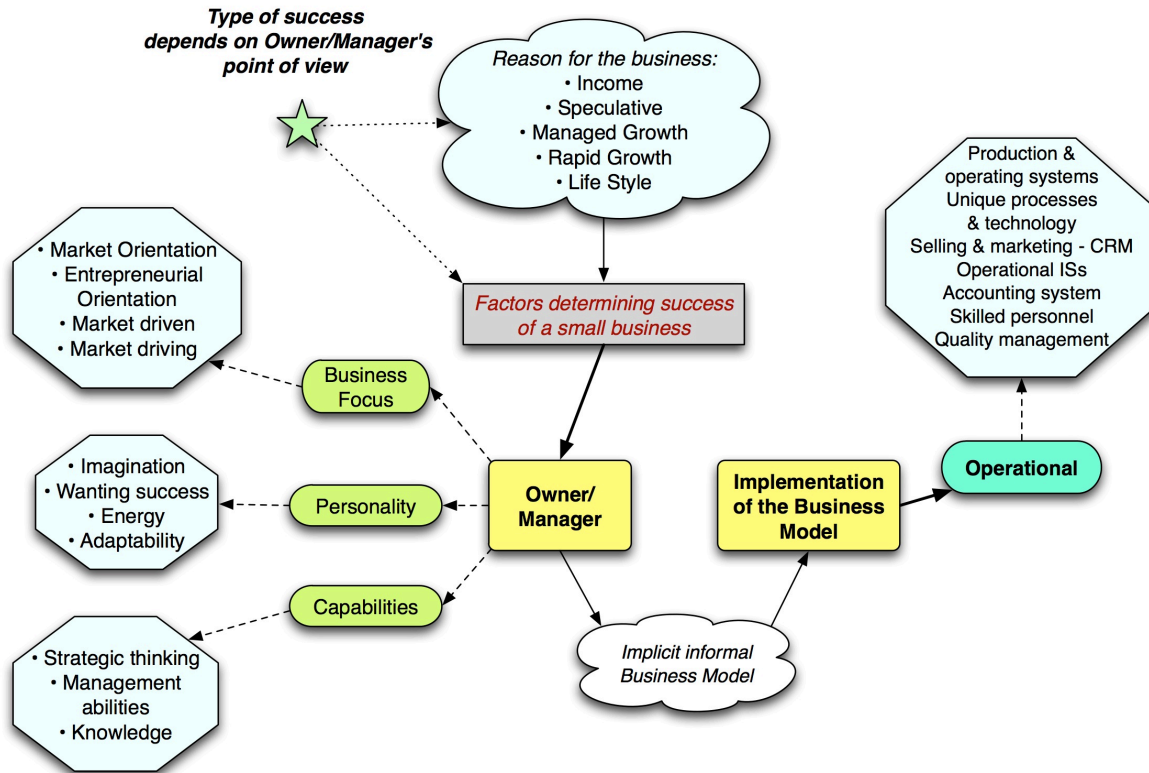


Figure 92 - OM's Possible Mental Model of Business Success

This interpretation of the mental view held by the non-adopting OMs aligns with the question that is asked in the paper by Brinckmann et al (2004).

*Thus entrepreneurs “could engage in extensive business planning or just storm the castle by rallying resources together, orchestrating an immediate offering and hustling for a first customer” (p. 24).*

Perhaps the concept of ‘just storming the castle’ is exactly what has happened in at least two of the cases in study. They are certainly immature businesses that appear to be growing rapidly and they were trading vigorously. In three of the cases it was not possible to determine how profitably they were trading and whether they were exercising sufficient control to ride out an unexpected deterioration in market conditions.

Referring back to the IPC Model Adoption Theory (Figure 87), the concepts identified that affect adoption were:

- Business maturity and complexity;
- OM knowledge of accounting;
- Commitment to the implementation process; and
- Availability of an external consultant.

Lack of knowledge of accounting can be overcome with the help of the IPC Model inbuilt structure and process and with the assistance of a consultant. Commitment comes from the OM seeing value in the formal planning and control process. That 'value' may be that the 'process' contributes to the goals of the business. Rogers (2003) believes that an innovation (IPC Model in this case) will only survive if it contributes to the goal of the organisation.

Business maturity and complexity is another matter and arises frequently in the small business literature. Empirical evidence shows that successful, growing businesses and those in latter stages of growth cycle tend to use increasingly more sophisticated versions of FPC or MCS as they progress through their life cycle. Emphasis on the importance of a cyclical, systems approach to management is a key success factor (Kraus, 2006; Romano, 1994; Gerber, 2001; McMahon, 1999; Nogare, 2006; O'Neil, 1986; Perera et al, 2007; Wijewardena et al, 2004; Brinckmann et al, 2010; Runyan, 2008; Akroyd et al., 2010; Kober et al., 2007).

The case studies of Mazzerol et al. (2009) and Akroyd and Kober (2010) show that high growth firms do not necessarily adopt formal MCSs at least in their early years. A firm adopting a high growth strategy may not place emphasis on budgets and cost controls (Chenhall and Morris, 1995; Dent 1990).

The MCS changes over time and is linked to the strategies and culture being adopted by the firm. These considerations are more dominant in the minds of the OMs than the efficacy of a particular planning and control software tool. If they are not pre-disposed to precise financial measurement and control being part of their management style, then the presence of a software tool will not change their view.

Generally it has been shown that adoption of computer based ISs is more prevalent in small businesses where the OM has a good knowledge of computers (DeLone, 1988).

The literature reports on the status quo. It does not take into account the effect of a deliberate intervention such as the IPC Model. In this case the aim is to make changes to the accounting system and to let the planning and control process inherent in the program change the OM mindset. This was the experience of the case studies.

All the case study businesses could be classified as young and growing businesses. There was not a direct relationship between use of the IPC Model and growth and profitability as some of the cases were growing without having a formal planning and control system in place. However the Fitness Studio showed improved growth and profitability with the use of the software tool.

The study revealed that the importance of OM characteristics cannot be under-estimated. Such characteristics are generally described (Hudson et al., 2001; Winch and Arthur, 2002; Bianchi, 2002; Hamilton, 2007; Gerber, 2001) and are listed in Section 2.3. Whilst the literature reports that OMs do not have the time, resources or interest to engage in the planning and control activity (and this was observed), they would make time if they valued the activity or had the knowledge to value the activity.

The IPC Model Adoption Theory implies that after use of the IPC Model the OM's management control mindset changes to:

- Forward looking;
- Thinking strategically; and
- Adaptive control.

The Small Business Success Model refers to “strategic thinking” and “management abilities” as essential characteristics for success. How do these compare with the above?

No doubt the Dog Day Care Centres and the Building Materials Wholesaler's OMs think strategically about their businesses. The Clothing Store showed strategic thinking in opening a third store for clearance of dated inventory. The difference is that their thinking is related to tactics and operational issues. Had they adopted the IPC Model, according to the theory, they would be able to quantify their strategic thinking and test to see if their predictions make sense.



They would be more focussed on the economic aspects of their business. They would articulate their business model. They would exercise adaptive control. They would have a forward-looking mindset that is clearly quantitative and more precise than before. Their mental model of business success would fill in the bottom half of the diagram. These characteristics are what is meant by “Changes in the OM’s Management Control Mindset” in the IPC Model Adoption Theory.

Why would they be predisposed to considering installing the IPC Model? Possibly if they are forced to by poor business outcomes or they need to raise capital or they appreciate the idea of the IPC Model and perceive the tool to be easy to use. In a commercial environment the OMs may know of other small businesses that are using the software tool effectively. There are many reasons but in the case studies these circumstances did not arise.

The work of Reid and Smith (2000) describes some of the empirical evidence of the contingencies that affect the design of the business’s management information systems. These authors surveyed 150 Scottish micro-firms and confirmed three hypotheses. Cash flow, funding shortage and innovation affected the ISs selected. These attributes are possible adoption factors as well but were not observed in the case studies purely because the companies were approached to be part of a research programme.

In fact, all of the case study participants were most enthusiastic about the prospect of a new MCS that was specifically designed for small businesses. The non-adopters were not against the idea and were aware that their management systems were not ideal.

In Reid and Smith’s paper (2000) businesses studied appeared to cluster into three firm types that were defined as “adaptive”, “stagnant” and “running blind”. These concepts can certainly be applied to the cases. The Fitness Studio and the Computer Store were definitely “adaptive” whereas the others were clearly “running blind” with ineffective management accounting and an inadequate information base for decision-making. Certainly the latter businesses were operating by feel and emotion rather than based on facts and logic.

With these particular characteristics, the effectiveness of planning and control in a small business clearly depends on the desire and the skill of the OM in its implementation. This finding emphasises the importance of a particular focus on OM characteristics in any new research in the area.

### **6.7.3 The Business Model**

The business model concept (as described in Sections 2.1.2 and 2.4.3) is used in the IPC Model as a method to define the business goals. After completing the business model the OM sets the performance goals for the business. The idea behind this section of the IPC Model is based on the work of Morris et al (2005, 2006); Shafer et al (2005); Kleindl (2000) and Mitchell (2004) who address the problem of how to express the business model in a systematic way.

Formulating the business model encourages strategic thinking. Three of the cases (Fitness Studio, Clothing Store and Wholesale Building Materials) were able to produce their business model using the software tool. Morris et al. (2006) schema for defining the business model was found to be satisfactory. Two of the cases did not appear to be interested in articulating their business model.

Both the Small Business Success Model and the IPC Model Adoption Theory emphasise the benefits of the OM thinking strategically as part of the planning process. For small businesses that do not have management training the use of a consultant to guide the process was found to be helpful.

The OMs that completed their business model were quite capable of doing it on their own. When it came to answering the inbuilt questionnaire, it was apparent that the OMs had internalised their business model and could easily respond to the questions.

### **6.7.4 Implementation of the Business Model**

Management literature describes three levels of control (Davis, 1974; Chenhall, 2003; Anthony and Govindarajan, 2007; Otley, 1980):

- Strategic Planning;
- Management Control (Tactical planning and performance measurement); and
- Operational Control (Day-to-day planning and performance measurement).

These three levels align with the Small Business Success Model. Strategic Planning relates to being clear about the “Business Model”. Management Control aligns with the “Economic Factors” and Operation Control with “Operational Factors”.

These authors recognise that the competence with which the business model is implemented, influences the success of the business regardless of size. This is assuming that the business model itself gives the organisation a competitive edge and a potentially profitable position in the value chain.

The IPC Model is a tool to assist with the implementation of the business model and as such is a key factor in the overall MCS of the organisation. Although the IPC Model focuses on the “Economic” area of the business the control aspects of the inbuilt process must impinge on Operational aspects of managing the business.

The principle of continuous Adaption (adaptive control) in the IPC Model Adoption Theory allows for the business model to be modified as needed. Regular performance measurement prompts adjustments to implementation of the business model that lead to improved business outcomes.

The findings from the case study research that led to the IPC Model Adoption Theory are therefore consistent with the Small Business Success Model that arose from interpretation of the literature in Chapter 2.

### **6.7.5 Adoption Issues**

The theory developed from the case study data identified four main factors affecting the adoption of the IPC Model. This section refers back to the literature review on this topic in Section 2.7 of the thesis to examine where there is alignment or otherwise with previous research.

At the outset, this thesis distinguishes between the adoption of a new MCS in the small business and the ‘vehicle’ used to enable the implementation and on-going function of the MCS. The ‘vehicle’ is the IPC Model software package. The argument is that if the OM is not disposed to working ‘on’ the business then the nature of the software vehicle is immaterial.

The literature review brought out several relevant factors that affect the adoption of IT/IS in small business. In summary, these are:

- Computer based ISs are mainly used for high transaction based, operational purposes such as accounting, sales, inventory control, personnel records/payroll and manufacturing assistance with accounting having a high priority (due to compliance needs) (Thong and Yap, 1995);

- OM knowledge and enthusiasm for IT/IS usage was a key factor (Cragg and King, 1993; Lee, 2004);
- The larger, more established small businesses are more likely to make extensive use of IT/IS (Thong and Yap, 1995);
- The inherent innovativeness of the firm is important (Lee and Runge, 2001);
- There is an emerging link between small firms adopting computerisation and improvements in business operating performance particularly with regard to their relationships with customers and suppliers (Lee et al., 2009; Quresil et al., 2009);
- There was a lack of emphasis on management software (Armstrong et al., 2011); and
- Small businesses are slow to invest in IT/IS due to their ‘resource poverty’ (Thong and Yap, 1995; Welsh and White, 1981).

These factors are consistent with the findings of this research. The size and maturity of the business and the OM’s knowledge are obvious similarities. These studies however, are observations of the status quo. Introducing the IPC Model to a small business is an intervention. The aim is to encourage the adoption of an improved management system – an innovation.

Although it is acknowledged that larger, mature businesses are more likely to adopt (more sophisticated in their management practices), there is no technical reason to eliminate the smallest of businesses (start ups for example) from the list of potential adopters. The overriding pre-requisite is that the accounting system is in place and that it is being responsibly and regularly maintained. Without accurate data the IPC Model cannot be adopted. The literature identifies the use of computer based accounting systems as having high priority for small businesses (Thong and Yap, 1995).

This research specifically identified OM knowledge of accounting as being an adoption factor. Lack of knowledge does not preclude the possibility of adoption on the other hand. The IPC Model has been designed as a learning tool, guiding the OM in the planning and control activities. In the case of lack of accounting knowledge, the implementation of the MCS would need the assistance of a professional such as a management consultant or a business coach. The use of the mapping scheme is designed

to simplify the MCS. Inbuilt accounting entries (the 'expert' system) mean that the complex parts of accounting transactions are transparent to the user.

Regardless of the above factors that influence the adoption of the MCS, this research has identified the need for the OM to be committed to the learning stage and to the idea that business performance can be improved if the IPC Model is adopted. This aligns with Rogers' (2003) suggestion that adoption of an innovation involves the decision to commit resources to the implementation or use of the innovation.

There is a time factor that needs to be acknowledged when considering adoption of the IPC Model. Rogers (2003, p. 281) in describing his method of adopter classification recognises that the classification does not include incomplete adoption. It has been previously noted that none of the cases studied fully 'adopted' the IPC Model in that they did not use all of its features. (The capital budgeting feature was not used, for example.)

On the other hand the cases gained benefit from the IPC Model although it was not fully adopted in an utilisation sense. The IPC Model Adoption Theory assumes regular use of the IPC Model. With regular use, knowledge is gained and as time progresses utilisation (of features) increases together with increased skill in forecasting and improvements in management control. Thus in this sense the 'adoption' of the software (the innovation) is a time related concept if the term 'adoption' relates to using all of the software's features. In this analysis, however, 'adoption' refers to simply making use of the software from month one and onwards.

### **6.7.6 Discussion of the Research Outcomes**

This research has shown that specialised planning and control software can be effective in encouraging the OM of a small business to engage in strategic management practices. This type of intervention can yield positive results in the sense that improved business outcomes and management practices were observed.

The software developed in the study is still a prototype and can be improved with additional functionality that was identified in the research. Nevertheless the research has shown that the software in its present form is stable and was effective to varying extent in the cases studies. The conclusion is that it is suitable for the small firm to use.

The management control process embedded in the software was shown to influence the mindset of the OM and acted as a catalyst to improve business practice especially in the accounting area.

It is uncertain about the need for and the use of a consultant. The research shows that the extent of usage depends on the state of the accounting system and the knowledge of the OM. Small business will need to weigh up the value realised from implementing an improved MCS versus the cost to implement and maintain the system.

It is not known whether a video based tutorial system available on demand (via Internet) will be sufficient to aid the OM in operating the software. It depends on the OM's cultural orientation – predisposed to self teaching or preferring to learn through personal interactions (Bunker et al., 2007). Even if such a system was suitable, the need to maintain 'process discipline' may require external prompting. It has been clearly identified that OM's generally are not inclined to embark on the 'hard cognitive work' (Davis, 1974) of planning unless taken away from the day-to-day for a period of time to concentrate on the task. This is the role of the business coach – the role of a motivator. Whilst this problem has been identified the practical solution has not.

At this stage it is not clear what is the best business model to diffuse the innovation once the research phase has been completed.

The research program was conducted in a limited time frame of three and a half years that included time needed to write the software followed by the time to carry out the case studies. The researcher observed enthusiasm for the concept from the participants generally but it takes time to introduce an innovation or a revised way of managing a business especially when the learning cycle is as long as a month. It is probably valid to assume that the full benefits of the IPC Model may have been more completely realised given a longer time period.

## **Chapter 7 Conclusion**

This chapter summarises the results of the research program that has been conducted over a period of three and a half years. There would not have been any result without the support of the case study participants. They were all enthusiastic about the study (at least initially) even when circumstances for some of them prevented adoption of the software.

It must be remembered that the software was created from scratch and is still a prototype, although some would say it is of 'beta testing' standard. The most satisfying aspect of the research was to see two of the cases adopt the software in their organisations.

Before summarising the research results, I need to thank my supervisor who provided useful discussions during the program and would set impossible barriers to be leaped over from time to time.

### **7.1 Summary of Research Results**

For any enterprise, regardless of size, the planning function requires 'hard cognitive work' (Davis, 1974). There is always a reluctance to have to stop the day-to-day activities that seem to have more immediate priority and attend to forecasting the future.

That reluctance has a psychological basis in that most people find it difficult to envisage the future. With a business there is a fear of being 'wrong' with forecasting. In the cases studied, the tendency was to be conservative with sales forecasting for example. The IPC Model, however, offers a process that allows the user to 'have a go' at predicting future outcomes for the business.

The process then encourages 'continuous adaption' as actual results become known month by month. In the two adopting case studies proficiency in making predictions improved over time. This improvement occurs because the OM's knowledge of the factors driving the business improves with regular use of the software tool. A forward-looking mindset and a continuous adaption philosophy improved control of the business.

In this research the software (the IPC Model) was designed, built and then tested in five case studies. Following analysis of the data collected, a theory (the IPC Model Adoption Theory) was developed that enhanced the understanding of factors that contribute to software

adoption, the efficacy of the software, its impacts on the OM's mindset and the outcomes for the business. The IPC Model has been designed as a generic planning and control tool for small businesses not specifically for the case study businesses.

The conclusions to be drawn from the research are as follows:

- A major impact of the software tool was to expose the deficiencies that existed in the case study accounting systems. In all cases the IPC Model acted as a catalyst encouraging modification of the accounting systems. This then allowed the OMs to embark on intelligent planning and useful performance measurement.
- The act of using the software tool prompted the OM to develop a mindset that was forward looking, involved thinking strategically about the business and used adaptive control techniques inherent in the IPC Model process.
- The feedback mechanism built into the tool that allowed performance measurement of up to twelve key factors, prompted the OM to exercise regular control of the business. Better information led to better control.
- The study revealed that in the small business context where the appropriateness of the accounting system for planning purposes was found to be in doubt, professional advice from a consultant or business coach would be desirable during the software implementation phase. Some small businesses may want to continue with outside assistance to provide the motivation for the regular monthly review of performance. Whether outside help was necessary depended on the OM's personality and accounting knowledge and the value placed on the planning and control activity.
- The factors that affected the adoption process related to business maturity and complexity, OM knowledge of accounting and the OM's commitment to the implementation process that can take several months of elapsed time in order to experience the monthly process cycles.

Are these results valid for any type of small business? Certainly, any type of organisation that operates a standard accounting system can use the software. The findings for the five cases studied are that there was no question of the software tool functioning as designed. The characteristics of the case study businesses and their OMs were found to be entirely



consistent with other empirical research in the literature. That is in every case the quality of their MCS needed improving and the IPC Model provided the structure and process to effect an improvement. The impact of introducing the IPC Model to the case study businesses was found to be positive overall even in the cases that did not adopt the software.

The research findings suggest that the results could validly be translated to any type of small business.

### **7.1.1 Answering the Primary Research Question**

The nature of case study research is such that it is not valid to extrapolate the findings to the general population. The purpose is however, to draw conclusions from the observations made and to draw out the learning that has resulted from the interactions. The conclusions drawn here are based on the detailed analysis of the results presented in the previous chapter.

Despite the fact that more data could be collected and more analysis of results is possible, valuable insights have already arisen from the experience to date.

The most outstanding observation from the cases studied is that the problem that small businesses generally have with the planning and control function was certainly found to be true. The analysis of the research results provides answers to the primary research question, which was:

*“How can an improved approach to management control in small businesses be incorporated into a software tool that is effective in encouraging small businesses to improve their planning and control function?”*

The research question needs to be answered in two steps. The first is the design of the software tool that was addressed in Chapter 4. The embedded management process used standard management accounting practice plus the domain knowledge and innovation of the researcher. The functional aspects of software design were relatively straight forward in the sense that the software operated successfully as per the design.

The second step was to focus on whether the tool could be effective in encouraging small businesses to improve their planning and control function. The results of the case studies revealed that the willingness of the case study business owners to take the time and effort to implement the improved MCS guided by the IPC Model process was the

issue. The research revealed that the presence of the software acted as a catalyst to encourage adoption of the process providing structure, rigour and ease of use to the planning and control function.

The result of step two was the development of a theory for the adoption of the IPC Model that was developed from Chapters 5 through 6 in the thesis.

The conclusion from the research is the IPC Model was effective in having an impact on all the case study business outcomes. The contribution to knowledge that evolved in the research was an enhance understanding of the factors that contribute to the successful implementation of the IPC Model as a software package and of the embedded process designed to improve management control in the organisation.

The principles developed in this thesis have general application to all small businesses regardless of type or location. This generalisation is argued to be valid as the characteristics of the OMs that existed in the case studies, the nature of their businesses and the ‘resource poverty’ (Welsh and White, 1981) experienced are well supported in the literature.

The contribution to knowledge lies in the discovery that the case study businesses were no different to those described in other empirical studies. However, the IPC Model Adoption Theory clearly explains the factors that affect the successful implementation of effective management control in small businesses via the IPC Model software tool.

### **7.1.2 Answering the Secondary Research Questions**

The **first group** of secondary questions is to observe via the case studies specific indicators of the effectiveness of the MCS. The findings are as follows:

*“What is the OM’s reaction to the IPC Model? Is it perceived as being helpful in running the business?”*

Certainly in the first and most advanced case, the fact that the OM is continuing to use the system after more than 20 months is evidence that the system is helpful in running the business.

*“Does forecasting accuracy and hence control improve with time?”*

It is not possible to be definitive in answering this question based on the experience of the one longitudinal case. Nevertheless the evidence suggests that the answer to the question is most likely a “yes”.

The most compelling evidence for this conclusion comes from Section 5.1.5, Figures 50 and 54. These are the two most important long-term graphical representations of the OM’s ability to forecast with some accuracy. They are the Cash Flow and Gross Profit forecasts compared with actual results. Clearly the OM’s forecasts from November 2009 until July 2010 were not accurate but improved markedly from July 2010 to February 2011.

Where actual events cause deviation from expected outcomes, corrections were made early, either by changes in operating procedures or in the forecast. The feedback mechanism engendered a learning process that enhanced predictive skills. For this reason the logical expectation is that forecasting accuracy should improve with time provided the OM is motivated to work on the planning diligently and regularly.

*“Will the OM be disposed to working “on” the business on a regular basis after being exposed to the IPC Model?”*

Not necessarily. The problem of finding time to work on the planning function still exists despite the efficacy of the software tool. With prompting from a consultant or business coach the planning function became a regular part of the monthly cycle. Highly motivated OMs may not need to be prompted by a consultant or coach but it is suspected that this would be the exception.

The **second group** has one secondary question that is related to the design of the MCS. Based on the characteristics of the small business the MCS uses a simplified approach to performance measurement and to planning compared to the traditional approach. This is explained in Chapter 4. Thus the secondary question is:

*“Is the level of simplification in the small business MCS still able to be effective as a control mechanism?”*

There is no adverse reaction to the Mapping Scheme that aims to simplify the planning and monitoring process. Users liked the idea of simplification of their accounting COA for planning purposes but all users could further simplify without jeopardising their

planning process. In fact increased aggregation of accounts would make the planning process easier.

The IPC Model's process itself is not simplified. It follows standard management accounting procedures and lends rigor to the planning process.

The **third group** of secondary questions is to observe whether the implementation of the software tool has an educational function for the small business owner.

*“Does the IPC Model have a learning and growth function that allows the OM to gain an enhanced understanding of how business success is achieved?”*

In all cases there is evidence of at least some learning and growth, and in the case of the longitudinal study, considerable learning and growth.

*“Can the IPC Model take the place of a business coach or reduce the need for one, and thus provide a needed service at low cost?”*

The research has revealed that it is not certain if a consultant is required to work alongside the OM in implementing and maintaining the IPC Model. In the first case, the OM has chosen to make use of a consultant on a monthly basis but possibly because he sees benefit in the support and interaction that is possible under that arrangement. It may not be that he needs help with operating the software.

The conclusion drawn from the cases studied is that the planning process benefits from interaction with a consultant or business coach. Whether this service can be offered at low cost depends on the perspective of the business. The input need only be for approximately two or three hours per month which should not be too onerous for most businesses, especially if they see value in the regular consultation process.

## 7.2 Future Work

The study has confirmed that there is definitely scope for looking into ways to improve the MCSs of small businesses. This research programme tackled the problem with the use of a software tool with some success. It is hoped that this first step will open the doors to more work in this area that probably warrants more attention, considering the status of the small business sector in the Australian (and other) economies.

There are two areas of possible future work. Firstly the commercialisation of the software tool and secondly, the consideration of where further research effort should be placed.

### **7.2.1 Commercialisation of the IPC Model**

The adopting case study participants are of the opinion that the IPC Model could be commercialised. The next step would be to make some improvements to the existing package and then commence beta testing over an extended period – possibly with as many as 30 users. During the beta testing phase the software would be improved gradually until it became a full commercial package. It is considered that close interaction with users during this process is essential to make sure that the software continues to be usable and that it meets the needs of its intended audience.

The key improvements that are envisaged are:

- The addition of a routine that consolidates data from all Branches in order to show the overall performance of the business. This upgrade would need to include a facility for identifying contra accounts between branches. Contra accounts arise when the head office lends money to a branch or a branch returns a loan or whenever there is movement of stock between branches. The operation in the IPC Model must be that when any identified contra account is changed, the opposite account in the other (tagged) branch needs to be updated at the same time, either with user direction or automatically.
- Other improvements that extend the model include more detailed sales forecasting that includes volumes and pricing policies, personnel budgeting, production costing (to calculate COGS) and a full depreciation schedule. These modules have always been planned from the start but time constraints did not allow their development.
- If the format for the software remains as a desktop based program updating would have to be done via the web with automatic client notification to download and update the latest version. This may require the services of specialists in the area of automatic notification and updating of software via the web.
- There is also the need to add data input routines for web based accounting systems such as ‘Xero’ (Xero, 2011) and ‘Saasu’ (Saasu, 2011) in addition to

interface with MYOB™ and QuickBooks®. In time, interfaces with other accounting packages will be needed.

- There are positive and negative arguments concerning whether the software should be delivered via the web which is becoming a popular mode for delivering software as is evidenced by the two accounting packages mentioned above. With the popularity of ‘cloud’ computing the question is whether the software needs to be delivered through a browser when it can be accessed from any of the user’s computers at any time. The best method of delivery would need to be decided in due course.

If the IPC Model goes on to be commercialised, then the research backing its design and delivery to the small business sector would be a worthwhile contribution to knowledge and society.

### **7.2.2 Further Research**

If during the commercialisation phase, there are 20-30 beta testing companies whose use of the program and feedback is being monitored closely, the opportunity exists for extending the research begun here.

The aims for the new research would be to:

- (a) measure the effectiveness of the MCS inherent in the software tool; and
- (b) collect data with respect to the companies’ business models.

This proposed future research has an overall aim to improve the management skills of small business owners in general. The idea would be to gather data over an extended period of time and to be able to compare the impact on different types of companies. For example, this research did not investigate a manufacturing small business. The business model data collected, would be a valuable addition to the work started by Morris et al. (2006).

There are two disciplines involved. That of IS research and of management accounting research. A multi-discipline approach would yield a better understanding of planning and control characteristics of the sector – especially comparing the before situation and then the situation after the full implementation and adoption of the software tool over an extended period of time.

The qualitative research methods developed in this research yielded an in depth understanding of the sector and its problems, confirming other studies in the area. This work could be extended such that the adoption model developed could be tested and possibly extended or changed as necessary. Extension of this research would benefit greatly from the use of a larger sample of users.

An interesting side issue is the question of whether the IPC Model that collects performance data at a high level for different small business industry groups would not form the basis to develop benchmarking. Such data would be of use to these businesses as they could measure their performance against similar (anonymous) businesses in the same industry groups. This type of research could supplement that of St Pierre et al., (2006).

Whilst the small business sector has attracted a considerable body of research, much has identified and confirmed known problem areas – those of poor management practices and ‘resource poverty’ (Welsh and White, 1981). This research has attempted to *find a solution to these problems* using an IS approach. It is suggested here that future research work continue along the lines of ‘solving the problems’ thus helping the sector improve its performance and thereby its contribution to the local economy.

## **References**

- ABS 2002, 'Small Business in Australia 2001, Catalogue No. 1321.0', *Canberra: Australian Bureau of Statistics*, p. 137.
- ABS 2004, 'Characteristics of Small Business, Australia (Reissue), Catalogue No. 8127.0', *Canberra: Australian Bureau of Statistics*.
- ABS 2004b, 'Business Register Counts of Business - Summary Tables - Cat. No. 8161.0.55.001', *Canberra: Australian Bureau of Statistics*.
- ABS 2010, 'Counts of Australian Businesses, including Entries and Exits, June 2007 to Jun 2009 – Cat. No. 8165.0', *Canberra: Australian Bureau of Statistics*.
- Ackelsberg, R and Arlow, P 1985, 'Small Businesses Do Plan and It Pays Off', *Long Range Planning*, vol. 18, no. 5, pp. 61-7.
- ActionCOACH, Business Coaching Services, viewed 19 January 2011, <<http://www.actioncoach.com/>>.
- Akroyd, C and Kober, R 2010, 'The emergence and utilisation of management control system in a high growth start-up firm', *Working Paper (with permission) The University of Auckland Business School, Department of Accounting and Finance*.
- Alight LLC, 2010, *Continuous Planning and Scenario Analysis*, viewed 20 January 2011, <<http://www2.alightplanning.com/Budgeting2a.html?source=CPB5>> and <<http://www2.alightplanning.com/Forecasting.html?source=CPBP>>.
- Anthony, R N and Govindarajan, V 2007, 'Management Control Systems, Twelfth Edition', *McGraw-Hill Irwin*.
- Armstrong, B, Fogarty, GJ and Dingsdag, D 2011, 'What properly validated surveys can tell us about successful implementation of small business information systems', *IBS Journal of Business and Research*, vol. 2, pp. 1-19.
- ASIC Insolvency Statistics – Series 3.1 2010, viewed 7 March 2011, <<http://www.asic.gov.au/asic/asic.nsf/byheadline/ASIC+insolvency+update+december+2010?openDocument>>



- Baard, V and Watts, E 2006, 'Factors Contributing to Success: A Performance Measurement Model Specific to Small Service Sector Firms', *International Council for Small Business, 51st World Conference*, p. 11.
- Baker, W E and Sinkula, JM 2009, 'The Complementary Effects of Market Orientation and Entrepreneurial Orientation on Profitability in Small Businesses', *Journal of Small Business Management*, vol. 47, no. 4, pp. 443--64.
- Baskerville, R and Pries-Heje, J 1999, 'Grounded action research: a method for understanding IT in practice', *Accounting Management and Information Technologies*, vol. 9, pp. 1-23.
- Baskerville R, Pries-Heje, J and Venable, J 2007, 'Soft Design Science Research: Extending the Boundaries of Evaluation in Design Science Research', *Proceedings of the 2nd International Conference on Design Science Research in Information Systems and Technology*, vol. (DESRIST 2007), Pasadena, California, USA, 13-15 May 2007.
- Baskerville, R and Myers, M D 2004, 'Special Issue on Action Research in Information Systems: Making IS Research Relevant to Practice-Foreword', *MIS Quarterly*, vol. 28, no. 3, p. 329.
- Baskerville, R 2001, 'Conducting Action Research: High Risk and High Reward in Theory and Practice', *Qualitative Research in IS: Issues and Trends*, E.M. Trauth (Ed.), Idea Group, Hersey, PA, pp. 192-215.
- Baskerville, R and Wood-Harper, A T 1998, 'Diversity in Information Systems Action Research Methods', *European Journal of Information Systems*, vol. 7, no. 2, pp. 90-107.
- Baskerville, R L and Wood-Harper, A T 1996, 'A critical perspective on action research as a method for information systems research', *Journal of Information Technology*, vol. 11, no. 3, p. 235.
- Berman, J A, Gordon, D D and Sussman, G 1997, 'A study to determine the benefits small business firms derive from sophisticated planning versus less sophisticated types of planning', *The Journal of Business and Economic Studies*, vol. 3, no. 3, pp. 1--11.
- Berry, A J, Sweeting, R and Goto, J 2006, 'The effect of business advisers on the performance of SMEs', *Journal of Small Business and Enterprise Development*, vol. 13, no. 1, p. 33.

- Bianchi, C 2002, 'Introducing SD modelling into planning and control systems to manage SMEs' growth: a learning-oriented perspective', *System Dynamics Review*, vol. 18, no. 3, p. 315.
- Bianchi, C and Winch, G W 2006, 'Unleashing growth potential in 'stunted' SMEs: insights from simulator experiments', *International Journal of Entrepreneurship and Small Business*, vol. 3, no. 1, pp. 92-105.
- Bierman, H J and Smidt, S 1971, 'The Capital Budgeting Decision', *Collier MacMillan International Editions*, vol. Third Edition.
- Bogiages, G 2004, 'Dynamic budgeting focuses on the future', *Accountancy SA*, vol. April, pp. 9-10.
- Bowen, J J 2003, 'New Wave Biz Plans: Business planning is as important as ever, but new, streamlined models are less academic and more focused on real- world experience', *Financial Planning*, p. 1.
- Bracker, J S, Keats, B W and Pearson, JN 1988, 'Planning and Financial Performance among Small Firms in a Growth Industry', *Strategic Management Journal (1986-1998)*, vol. 9, no. 6, pp. 591-603.
- Brews, P J and Hunt, M R 1999, 'Learning to plan and planning to learn: resolving the planning school/learning school debate.', *Strategic Management Journal*, vol. 20, no. 10, pp. 889-913.
- Brinckmann, J, Grichnik, D and Kapsa, D 2010, 'Should entrepreneurs plan or just storm the castle? A meta-analysis on contextual factors impacting the business planning-performance relationship in small firms', *Journal of Business Venturing*, vol. 25, no. 1, pp. 24-40.
- Brown, D A 2005, 'Management Control System Packages', *PhD dissertation, University of Technology, Sydney*.
- Bunker, D 2001, 'A Philosophy of Information Technology and Systems (ITandS) as Tools: Tool Development Context, Associated Skill and the Global Technology Transfer (GTT) Process', *Information Systems Frontiers*, vol. 3, no. 2, pp. 185-98.
- Bunker, D, Kautz, K and Nguyen, A L T 2007, 'Role of value compatibility in IT adoption', *Journal of Information Technology*, vol. 22, pp. 69-78.

- Bunker, D, Kautz, K and Anhtuan, A 2008, 'An exploration of information systems adoption: tools and skills as cultural artefacts – the case of a management information system', *Journal of Information Technology*, vol. 23, pp. 71-8.
- Business Resource Software, Inc., *Intelligent Business Plan Software*, viewed 19 January 2011, <<http://www.brs-inc.com/>>.
- Capterra, Inc., *The smart way to find software*, viewed 20 January 2011, <<http://www.capterra.com/budgeting-software/>>.
- Cassar, G and Gibson, B 2007, 'Forecast Rationality in Small Firms', *Journal of Small Business Management*, vol. 45, no. 3, p. 283.
- Castrogiovanni, G J 1996, 'Pre-Startup Planning and the Survival of New Small Businesses: Theoretical Linkages', *Journal of Management*, vol. 22, no. 6, pp. 801-22.
- Centage Corporation, *Budgeting, Forecasting and Reporting Software for Growth*, viewed 20 January 2011, <<http://centage.com/>>.
- Chenhall, R H and Morris, D 1995, 'Organic decision and communication processes and management accounting systems in entrepreneurial and conservative business organizations', *Omega*, vol. 23, no. 5, pp. 485-97.
- Chenhall, R H 2003, 'Management control systems design within its organizational context: findings from contingency-based research and directions for the future', *Accounting, Organizations and Society*, vol. 28, no. 2-3, pp. 127-68.
- Chenhall, R H and Kim, L S 2007, 'Multiple Perspectives of Performance Measures', *European Management Journal*, vol. 25, no. 4, pp. 266-82.
- Chesbrough, H 2010, 'Business Model Innovation', *Long Range Planning*, vol. 43, pp. 354-63.
- Coghlan, D 2004, 'Action Research in the Academy: Why and Whither? Reflections on the Changing Nature of Research', *Irish Journal of Management*, vol. 25, no. 2, p. 1.
- Cognos Inc., *Cognos Business Intelligence and Financial Performance Management*, viewed 19 January 2011, <<http://www-01.ibm.com/software/data/cognos/>>.
- Cologon, R and Cohen, D R 2008, 'FileMaker® Pro 9 Bible', *Wiley Publishing Inc., Indianapolis, Indiana, USA*, p. 735.

- Coyle, G and Exelby, D 2000, 'The validation of commercial system dynamics models', *System Dynamics Review*, vol. 16, no. 1, p. 27-34.
- Cragg, P 2008, 'Identifying key Information Systems competencies in small firms', *Total Quality Management and Business Excellence*, vol. 19, no. 1/2, p. 29.
- Cragg, P B and King, M 1993, 'Small-firm computing: Motivators and inhibitors', *MIS Quarterly*, vol. 17, no. 1, pp. 47-61.
- Craig, J and Moores, K 2005, 'Balanced Scorecards to Drive the Strategic Planning of Family Firms', *Family Business Review*, vol. 18, no. 2, p. 105.
- Cronholm, S and Goldkuhl, G 2003, 'Understanding the practices of action research', *2nd European Conference on Research Methods in Business and Management (ECRM 2003)*, Reading, UK, 20-21 March, 2003, p. 13.
- Cronholm, S 2003, 'Multi-grounded theory – Adding theoretical grounding to grounded theory', *2nd European Conference on Research Methods in Business and Management (ECRM 2003)*, Reading, UK, 20-21 March, 2003.
- Davila, A, Foster, G and Li, M 2009, 'Reasons for management control systems adoption: Insights from product development systems choice by early-stage entrepreneurial companies', *Accounting, Organizations and Society*, vol. 34, no. 3-4, pp. 322-47.
- Davila, T 2005, 'An exploratory study on the emergence of management control systems: formalizing human resources in small growing firms', *Accounting, Organizations and Society*, vol. 30, pp. 223-48.
- Davila, A, Foster, G, Christopher S. Chapman, Hopwood, A G and Shields, M D 2008, 'The Adoption and Evolution of Management Control Systems in Entrepreneurial Companies: Evidence and a Promising Future', in *Handbooks of Management Accounting Research*, Elsevier, vol. Volume 3, pp. 1323-36.
- Davis, F D 1989, 'Perceived Usefulness, Perceived Ease Of Use, And User Acceptance', *MIS Quarterly*, vol. 13, no. 3, pp. 319-41.
- Davis, G B 1974, 'Management Information Systems: Conceptual Foundations, Structure and Development', *McGraw Hill Book Company*, p. 339.
- Davis, G B and Olsen, M H 1985, 'Management information systems: conceptual foundations, structure and development', *New York: McGraw-Hill*.

- Davison, R M, Martinsons, M G and Kock, N T 2004, 'Principles of canonical action research', *Information Systems Journal*, vol. 14, pp. 65-86.
- DeLone, W H 1988, 'Determinants of Success for Computer Usage in Small Business', *MIS Quarterly*, vol. 12, no. 1, pp. 1-51.
- DeLone, W H & McLean, E R 1992, 'Information Systems Success: The Quest for the Dependent Variable', *Information Systems Research*, vol. 3, no. 1, pp. 60-95.
- DeLone, W H & McLean, E R 2003, 'The DeLone and McLean Model of Information Systems Success: A Ten-Year Update', *J. Manage. Inf. Syst.*, vol. 19, no. 4, pp. 9-30.
- Dembla, P, Palvia, P and Krishnan, B 2007, 'Understanding the Adoption of Web-enabled Transaction Processing by Small Businesses', *Journal of Electronic Commerce Research*, vol. 8, no. 1, pp. 1--17.
- Dent, J F 1990, 'Strategy, organisation and control: some possibilities for accounting research.', *Accounting Organizationa and Society*, vol. 15, pp. 3-24.
- Dick, B 2003, 'Rehabilitating Action Research: A response to Davydd Greenwood's and Björn Gustavsen's papers on action research', *Concepts and Transformation*, vol. 8, no. 3, pp. 255-63.
- Douglas, A and Glen, D 2000, 'Integrated management systems in small and medium enterprises', *Total Quality Management*, vol. 11, no. 4-6, p. S686.
- Dyt, R and Halabi, A K 2007, 'Empirical Evidence Examining the Accounting Information Systems and Accounting Reports of Small and Micro Business in Australia', *Small Enterprise Research - The Journal of SEAANZ*, vol. 15, no. 2, pp. 1-9.
- English, J 2001, 'How to Organise and Operate a Small Business in Australia', *Allen and Unwin*.
- Eisenhardt, K M 1989, 'Building Theories From Case Study Research', *Academy of Management. The Academy of Management Review*, vol. 14, no. 4, p. 532.
- Fiet, J O and Patel, P C 2008, 'Forgiving Business Models for New Ventures', *Entrepreneurship Theory and Practice*, vol. 32, no. 4, pp. 749-61.
- Forrester, J 1961, 'Industrial Dynamics', *Productivity Press: Portland, OR. (Now available from Pegasus Communications Inc, Waltham, MA.)*.

- Franco, M and Bourne, M 2003, 'Factors that play a role in 'managing through measures''', *Management Decision*, vol. 41, no. 8, pp. 698-710.
- French, S J, Kelly, S J and Harrison, J L 2004, 'The role of strategic planning in the performance of small, professional service firms', *Journal of Management Development*, vol. 23, no. 8, pp. 765-76.
- George, G and Bock, A J 2010, 'The Business Model in Practice and its Implications for Entrepreneurship Research', *Entrepreneurship Theory and Practice*, vol. 35, no. 1, pp. 83-111.
- Gerber, M E 2001, 'The E-Myth Revisited', *Harper Collins*.
- Gibson, B and Cassar, G 2005, 'Longitudinal Analysis of Relationships between Planning and Performance in Small Firms', *Small Business Economics*, vol. 25, no. 3, pp. 207-22.
- Gibson, B and Cassar, G 2002, 'Planning behavior variables in small firms', *Journal of Small Business Management*, vol. 40, no. 3, pp. 171--86.
- Gordon, L A and Miller, D 1976, 'A contingency framework for the design of accounting information systems', *Accounting, Organizations and Society*, vol. 1, no. 1, pp. 59-69.
- Green, S G and Welsh, A M 1988, 'Cybernetics and Dependence: Reframing the Control Concept', *Academy of Management. The Academy of Management Review*, vol. 13, no. 2, p. 287.
- Gregor, S 2006, 'The Nature of Theory in Information Systems', *MIS Quarterly*, vol. 30, no. 3 pp. 611-642.
- Gregor, S and Jones, D 2007, 'The Anatomy of a Design Theory', *Journal of the Association for Information Systems*, vol. 8, no. 5, Article 2, pp. 312-335.
- Gumbus, A and Lussier, R N 2006, 'Entrepreneurs Use a Balanced Scorecard to Translate Strategy into Performance Measures', *Journal of Small Business Management*, vol. 44, no. 3, p. 407.
- Hamilton, B 2007, 'A Tool That Makes Sense of Financial Numbers', *Accounting Technology*, vol. Dec 2007, p. 1.

- Hammer, M, Haney, C J, Wester, A, Ciccone, R and Gaffney, P 2007, 'The 7 Deadly Sins of Performance Measurement and How to Avoid Them', *MIT Sloan Management Review*, vol. 48, no. 3, p. 19.
- Harrison, J, Horrocks, J and Newman, R L 1970, 'Accounting - A Direct Approach', *F. W. Cheshire*.
- Hayen, R L 1982, 'Applying Decision Support Systems to Small Business Financial Planning', *Journal of Small Business Management*, vol. 20, no. 3, p. 35.
- Headd, B and Kirchhoff, B 2009, 'The Growth, Decline and Survival of Small Businesses: An Exploratory Study of Life Cycles', *Journal of Small Business Management*, vol. 47, no. 4, pp. 531--50.
- Hebert, F H and Bradley J B, 1993, 'Expert systems development in small business: A managerial perspective', *Journal of Small Business Management*, vol. 31, no. 3, p. 11.
- Hendriksen, E S 1965, 'Accounting Theory', *Richard D Irwin, Inc.*
- Hevner, A R 2007, 'A Three Cycle View of Design Science Research', *Scandinavian Journal of Information Systems*, vol. 19, no. 2, pp. Article 4, 1-6.
- Hevner, A R, March, S T, Park, J and Ram, S 2004, 'Design Science in Information Systems Research', *MIS Quarterly*, vol. 28, no. 1, p. 75.
- Honig, B 2004, 'Entrepreneurship education: toward a model of contingency-based business planning. ', *Academy of Management Learning and Education*, vol. 3, no. 3, pp. 258-273.
- Horngren, C T, Harrison, W T and Oliver, M S 2009, 'Financial and Managerial Accounting, Second Edition', *Prentice Hall*.
- Hudson, M, Smart, A and Bourne, M 2001, 'Theory and practice in SME performance measurement systems', *International Journal of Operations and Production Management*, vol. 21, no. 8, p. 1096.
- Huff, S L, Higgins, C and Lin, J T M 1987, 'Computers and the Halo Effect', *Journal of Systems Management*, vol. 38, no. 1, pp. 21-3.

- Igbaria, M, Zinatelli, N, Cragg, P and Cavaye, ALM 1997, 'Personal computing acceptance factors in small firms: A structural equation model', *MIS Quarterly*, vol. 21, no. 3, pp. 279--305.
- Iversen, J H, Mathiassen, L and Nielsen, P A 2004, 'Managing Risk in Software Process Improvement: an Action Research Approach', *MIS Quarterly*, vol. 28, no. 3, p. 395.
- Jänkälä, S 2005, 'The Use of Management Control Systems (MCS) Information in the Small Business Sector and the Relationship between MCS, Strategy and Performance', *Paper presented at the 28th Annual Congress of the European Accounting Association, 18-20 May in Guthenburg, Sweden.*, p. 1- 49.
- Jones, W D 1982, 'Characteristics of Planning in Small Firms', *Journal of Small Business Management*, vol. 20, no. 3, pp. 15-9.
- Kamler, B and Thomson, P 2006, 'Helping Doctoral Students Write - Pedagogies for Supervision', *Routledge, Great Britain*.
- Kaplan, R S and Norton, D P 1996, 'Balanced scorecard: translating strategy into action', *Boston, Mass.: Harvard Business School Press, c1996*.
- Kaplan, R S and Norton, D P T 1993, 'Putting the Balanced Scorecard to Work', *Harvard Business Review*, *Sep/Oct93*, vol. 71, no. 5, pp. 134-47.
- Klein, H K and Myers, M D 1999, 'A set of principles for conducting and evaluating interpretive field studies in information systems', *MIS Quarterly*, vol. 23, no. 1, pp. 67-94.
- Kleindl, B 2000, 'Competitive dynamics and new business models for SME's', *Journal of Developmental Entrepreneurship*, vol. 5, no. 1, pp. 73-85.
- Kober, R, Ng, J and Paul, B J 2007, 'The interrelationship between management control mechanisms and strategy', *Management Accounting Research*, vol. 18, pp. 425-52.
- Kraus, S, Harms, R and Schwarz, E J 2006, 'Strategic planning in smaller enterprises - new empirical findings', *Management Research News*, vol. 29, no. 6, p. 334-44.
- Landsberger, H A 1958, 'Hawthorne Revisited', *Ithaca*.
- Lange, J E, Mollov, A, Pearlmutter, M, Singh, S and Bygrave, W D 2007, 'Pre-start-up Formal Business Plans and Post-start-up Performance: A Study of 116 New Ventures', *Venture Capital*, vol. 9, no. 4, pp. 237-56.



- Lee, J 2004, 'Discriminant Analysis of Technology Adoption Behaviour: A Case of Internet Technologies in Small Businesses', *The Journal of Computer Information Systems*, vol. 44, no. 4, pp. 57-66.
- Lee, J and Runge, J 2001, 'Adoption of information technology in small business: Testing drivers of adoption for entrepreneurs', *The Journal of Computer Information Systems*, vol. 42, no. 1, pp. 44--57.
- Lee, S M, Kim, J, Choi, Y and Lee, S-G 2009, 'Effects of IT knowledge and media selection on operational performance of small firms', *Small Business Economics*, vol. 32, no. 3, pp. 241-57.
- Levy, M, Powell, P and Yetton, P 2011, 'Contingent dynamics of IS strategic alignment in small and medium-sized enterprises', *Journal of Systems and Information Technology*, vol. 13, no. 2, pp. 106-24.
- Lewin, K 1947, 'Frontiers in Group Dynamics II', *Human Relations*, vol. 1, no. 2, pp. 143-153.
- Lussier, R N and Halabi, C E 2010, 'A Three-Country Comparison of the Business Success versus Failure Prediction Model', *Journal of Small Business Management*, vol. 48, no. 3, pp. 360--77.
- Malmi, T and Brown, D A 2008, 'Management control systems as a package--Opportunities, challenges and research directions', *Management Accounting Research*, vol. 19, no. 4, pp. 287-300.
- Makridakis, S, Hogarth, R and Gaba, A 2010, 'Why Forecasts Fail. What to Do Instead', *MIT Sloan Management Review*, vol. 51, no. 2, p. 83.
- Marc, M, Peljhan, D, Ponikvar, N, Sobota, A and Tekavcic, M 2010, 'Determinants Of Integrated Performance Measurement Systems Usage: An Empirical Study', *Journal of Applied Business Research*, vol. 26, no. 5, pp. 63-75.
- March, S T and Smith, G F 1995, 'Design and natural science research on information technology', *Decision Support Systems*, vol. 15, no. 4, pp. 251-66.
- Markus, M L, Majchrzak, A and Gasser, L 2002, 'A design theory for systems that support emergent knowledge processes', *MIS Quarterly*, vol. 26, no. 3, pp. 179-212.

- Markus, L and Keil, M 1994, 'If We Build it, They Will Come: Designing Information Systems That People Want to Use', *Sloan Management Review*, vol. Summer 1994, pp. 11-25.
- Mazzarol, T, Reboud, S and Soutar, G N 2009, 'Strategic planning in growth oriented small firms', *International Journal of Entrepreneurial Behaviour and Research*, vol. 15, no. 4, pp. 320--45.
- McKay, J and Marshall, P 2001, 'The dual imperatives of action research', *Information Technology and People*, vol. 14, no. 1, p. 46.
- McMahon, R 1999, 'Modelling the extent of financial reporting practices amongst Australian manufacturing SMEs', *Small Business Economics*, vol. 13, no. 2, pp. 81-96.
- McMahon, R G P 2001, 'Business growth and performance and the financial reporting practices of Australian manufacturing SMEs', *Journal of Small Business Management*, vol. 39, no. 2, p. 152.
- McKiernan, P and Morris, C 1994, 'Strategic Planning and Financial Performance in UK SMEs: Does Formality Matter?', *British Journal of Management*, vol. 5, no. Special Issue, S31-S41.
- Metaxiotis, K and John, P 2003, 'Expert systems in business: applications and future directions for the operations researcher', *Industrial Management + Data Systems*, vol. 103, no. 5/6, pp. 361-8.
- Miller, D 1975, 'Strategy Making in Context: Some Empirical Archetypes.' *McGill University Working Paper*.
- Mitchell, D and Bruckner-Coles, C 2004, 'Establishing a continuing business model innovation process', *Journal of Business Strategy*, vol. 25, no. 3, pp. 39-50
- Mintzberg, H 1994, 'The Rise and Fall of Strategic Planning', *New York, The Free Press*.
- Morecroft, J 2007, 'Strategic Modelling and Business Dynamics: A Feedback System Approach', *John Wiley and Sons*.
- Morris, M, Schindehutte, M and Allen, J 2005, 'The entrepreneur's business model: Toward a unified perspective', *Journal of Business Research*, vol. 58, no. 6, pp. 726-35.

- Morris, M, Schindehutte, M, Richardson, J and Allen, J 2006, 'Is the Business Model a Useful Strategic Concept? Conceptual, Theoretical, and Empirical Insights', *Journal of Small Business Strategy*, vol. 17, no. 1, pp. 27-50.
- Murphy, G B, Trailer, J W and Hill, R C 1996, 'Measuring performance in entrepreneurship research', *Journal of Business Research*, vol. 36, no. 1, pp. 15-23.
- Myers, M D 2009, 'Qualitative Research in Business and Management', *SAGE Publications Ltd*, First Edition, p. 55.
- Nilsson, A 2010, 'Balancing the management control package of small, rapidly growing firms in turbulent environments', *International Journal Entrepreneurship and Small Business*, vol. 11, no. 1, pp. 3-22.
- Nogare, L D 2006, 'Micro to Small-Sized Enterprises: How Valuable Are They and How Can We Use Action-Oriented Research Methods to Find Out More About Them?' *Small Enterprise Research - The Journal of SEAANZ*, vol. 14, no. 2, pp. 93-107.
- Norman, D A 1998 (First Published 1988), 'The Design of Everyday Things', *The MIT Press, London, England*.
- Nunamaker, J, Chen, M and Purdin, T 1991, 'System Development in Information Systems Research', *Journal of Management Information Systems*, vol. 7, no. 3, pp. 89-106.
- O'Neil, H and Duker, J 1986, 'Survival and failure in small business', *Journal of Small Business Management*, vol. 21, no. 1, pp. 52-64.
- Orlando, J 2009, 'Turning Budgeting Pain into Budgeting Gain', *Strategic Finance*, vol. 90, no. 9, p. 47.
- Otley, D T 1980, 'The Contingency Theory of Management Accounting: Achievement and Prognosis', *Accounting Organizationa and Society*, vol. 5, no. 4, p. 16.
- Palmer, J W and Markus, M L 2000, 'The performance impacts of quick response and strategic alignment in specialty retailing', *Information Systems Research*, vol. 11, no. 3, pp. 241--59.
- Pearsall, J E (Editor) 1998, 'The New Oxford Dictionary of English', *Oxford University Press*.

- Perera, S & Baker, P 2007, 'Performance Measurement Practices in Small and Medium Size Manufacturing Enterprises in Australia', *Small Enterprise Research - The Journal of SEAAANZ*, vol. 15, no. 2, pp. 10-28.
- Perry, S 2001, 'The Relationship between Written Business Plans and the Failure of Small Businesses in the U.S.', *Journal of Small Business Management*, vol. 39, no. 3, pp. 201-8.
- Porter, M E 1980, 'Competitive Strategy', *New York, The Free Press*.
- Porter, M E 1985, 'Competitive Advantage - Creating and Sustaining Superior Performance', *Free Press*, p. 557.
- Porter, M E 1991, 'Towards a Dynamic Theory of Strategy', *Strategic Management Journal*, vol. 12, p. 95.10-28.
- Porter, M E 2001, 'Strategy and the Internet', *Harvard Business Review*, vol. 79, no. 3, pp. 62-78.
- Prophix Software Inc., *Complete Corporate Performance Management*, viewed 20 January 2011, <<http://www.prophix.com.au/>>.
- Pronto Software, viewed 20 January 2011, <<http://www.pronto.com.au/>>.
- Purao, S, Baldwin, C Y, Hevner, A R, Storey, V C, Pries-Heje, J, Smith, B and Zhy, Y 2008, 'The Sciences of Design: Observations on an Emerging Field', *Harvard Business School*, vol. Working Paper.
- QSR International Pty Ltd 2007, viewed 4<sup>th</sup> May 2011, < [http://www.qsrinternational.com/#tab\\_you](http://www.qsrinternational.com/#tab_you)>
- Quantrix, viewed 20 January 2011, < <http://www.quantrix.com/>>.
- Qureshil, S, Kamal, M and Wolcott, P 2009, 'Information Technology Interventions for Growth and Competitiveness in Micro-Enterprises', *International Journal of E-Business Research*, vol. 5, no. 1, pp. 117-40.
- Raymond, L 1985, 'Organizational Characteristics and MIS Success in the Context of Small Business', *MIS Quarterly*, vol. 9, no. 1, pp. 37-52.
- Reid, G C and Smith, J A 2000, 'The impact of contingencies on management accounting system development', *Management Accounting Research*, vol. 11, no. 4, pp. 427-50.

- Richbell, S M, Doug, W H and Perry, W 2006, 'Owner-managers and Business Planning in the Small Firm', *International Small Business Journal*, vol. 24, no. 5, pp. 496-514.
- Robinson Jr, R B 1982, 'The Importance of "Outsiders" in Small Firm Strategic Planning', *Academy of Management Journal*, vol. 25, no. 1, pp. 80-93.
- Rogers, E. 2003, 'Diffusion of Innovations' (5<sup>th</sup> Ed.), *New York, The Free Press*.
- Romano, C A and Ratnatunga, J 1994, 'Growth stages of small manufacturing firms: The relationship with planning and control', *British Accounting Review*, vol. 26, pp. 173-95.
- Rue, L W and Ibrahim, N A 1998, 'The Relationship between Planning Sophistication and Performance in Small Businesses', *Journal of Small Business Management*, vol. 36, pp. 24-32.
- Runyan, R, Droge, C and Swinney, J 2008, 'Entrepreneurial Orientation versus Small Business Orientation: What Are Their Relationships to Firm Performance?' *Journal of Small Business Management*, vol. 46, no. 4, p. 567.
- Saasu, *Online Accounting System*, viewed 6 June 2011, < <http://www.saasu.com/> >.
- Sandelin, M 2008, 'Operation of management control practices as a package--A case study on control system variety in a growth firm context', *Management Accounting Research*, vol. 19, no. 4, pp. 324-43.
- Sandino, T 2007, 'Introducing the First Management Control Systems: Evidence from the Retail Sector', *Accounting Review*, January 2007, pp. 1-49.
- Saunders, S G 1975, 'Dynamics of Cash Flow in a Medium Sized Company', *Assignment for Information Systems I, M.B.A. Course, University of Western Australia*, pp. 1-30.
- Schindehutte, M and Morris, M H 2001, 'Understanding strategic adaptation in small firms', *International Journal of Entrepreneurial Behaviour and Research*, vol. 7, no. 3, pp. 84-107.
- Schindehutte, M, Morris, M H and Kocak, A 2008, 'Understanding Market-Driving Behavior: The Role of Entrepreneurship', *Journal of Small Business Management*, vol. 46, no. 1, p. 4.

- Schwenk, C R and Shrader, C B 1993, 'Effects of Formal Strategic Planning on Financial Performance in Small Firms: A Meta Analysis', *Entrepreneurship Theory and Practice*, pp. 53-64.
- Scott, M and Bruce, R 1987, 'Five Stages of Growth in Small Business', *Long Range Planning*, vol. 20, no. 3, pp. 45-52.
- Shafer, S, Smith, H J and Linder, J 2005, 'The power of business models', *Business Horizons*, vol. 48, no. 3, pp. 199-207.
- Shillinglaw, G 1961, 'Cost Accounting - Analysis and Control', *Richard D Irwin, Inc.*
- Shin, I 2006, 'Adoption of Enterprise Application Software and Firm Performance', *Small Business Economics*, vol. 26, no. 3, p. 241.
- Simon, H A 1996 'The Sciences of the Artificial (3rd ed.)', *MIT Press, Cambridge, MA.*, p. 231.
- Simons, R 1991, 'Strategic Orientation and Top Management attention to Control Systems', *Strategic Management Journal (1986-1998)*, vol. 12, no. 1, pp. 49-63.
- Simons, R 1994, 'How new top managers use control systems as levers of strategic renewal.' *Strategic Management Journal*, vol. 15, pp. 169-89.
- Simons, R 1995, 'Levers of Control', *Boston: Harvard University Press.*
- Simić, D and Simić, S 2007, 'An approach to efficient business intelligent system for financial prediction', *Soft Computing - A Fusion of Foundations, Methodologies and Applications*, vol. 11, no. 12, pp. 1185-92.
- Sivabalan, P, Booth, P, Malmi, T and Brown, DA 2009, 'An exploratory study of operational reasons to budget', *Accounting and Finance*, vol. 49, pp. 849-71.
- SmartCompany.com.au P/L, viewed 20 January 2011, < <http://www.smartcompany.com.au/information-technology/myob-moves-into-web-hosting-and-domain-name-registration.html>>.
- Smith, B and Simon, M 2009, 'How Data Integration Systems affect Strategic Decision Making in Small Firms', *Journal of Small Business Strategy*, vol. 20, no. 1, pp. 35-51.
- St-Pierre, J and Delisle, S 2006, 'An expert diagnosis system for the benchmarking of SMEs' performance', *Benchmarking*, vol. 13, no. 1/2, p. 106.

- Stanton, P and Tweed, D 2009, 'Evaluation of small business failure and the framing problem', *International Journal of Economics and Business Research*, vol. 1, no. 4, pp. 438-53.
- Strauss, A L and Corbin, J M 1998, 'Basics of qualitative research: Techniques and procedures for developing grounded theory', *SAGE Publications Inc*, no. 2nd Edition.
- Street, C T and Meister, D B 2004, 'Small Business Growth and Internal Transparency: the Role of Information Systems', *MIS Quarterly*, vol. 28, no. 3, p. 473.
- Susman, G I and Evered, R D 1978, 'An Assessment of the Scientific Merits of Action Research', *Administrative Science Quarterly*, vol. 23, no. 4, pp. 582-603.
- Tapinos, E, Dyson, R G and Meadows, M 2005, 'The impact of performance measurement in strategic planning', *International Journal of Productivity and Performance Management*, vol. 54, no. 5/6, p. 370.
- Temtime, Z T, Chinyoka, S V and Shunda, J P W 2003, 'Toward strategic use of IT in SMEs: a developing country perspective', *Information Management and Computer Security*, vol. 11, no. 5, p. 230.
- Thong, J Y L 1999, 'An integrated model of information systems adoption in small businesses', *Journal of Management Information Systems*, vol. 15, no. 4, pp. 187-214.
- Thong, J Y L and Yap, C S 1995, 'CEO Characteristics, Organizational Characteristics and Information Technology Adoption in Small Business', *Omega, International Journal of Management Science*, vol. 23, no. 4, pp. 429-42.
- TopTenReviews, viewed 6<sup>th</sup> September 2011, <<http://accounting-software-review.toptenreviews.com/>>
- Van Gelderen, M, Frese, M and Thurik, R 2000, 'Strategies, uncertainty and performance of small business startups', *Small Business Economics*, vol. 15, no. 3, pp. 165--81.
- Vatter, W J 1971, 'Accounting Measurements for Financial Reports', *Richard D Irwin, Inc*.
- Venable, J 2010, 'Design Science Research Post Hevner et al.: Criteria, Standards, Guidelines, and Expectations', *Proceedings DESRIST 2010, LNCS 6105*, pp. 109-23.

- Venable, J, Pries-Heje, J, Bunker, D and , Russon, N L 2010, 'Creation, Transfer, and Diffusion of Innovation in Organizations and Society: Information Systems Design Science Research for Human Benefit', *IS Design Science Research, IFIP AICT 318*, pp. 1-10.
- Walls, J G, Widmeyer, G R and El Sawy, O A 1992, 'Building an Information Systems Design Theory for Vigilant EIS', *Information Systems Research*, vol. 3, no. 1, pp. 36-59.
- Walls, J G, Widmeyer, G R and El Sawy, O A 2004, 'Assessing Information System Design Theory in Perspective: How Useful Was Our 1992 Initial Rendition?', *JITTA : Journal of Information Technology Theory and Application*, vol. 6, no. 2, pp. 43-58.
- Walker, E and Brown, A 2004, 'What Success Factors are Important to Small Business Owners?', *International Small Business Journal*, vol. 22, no. 6, pp. 577-94.
- Walsham, G 1993, 'Interpreting Information Systems in Organisations', *John Wiley and Sons*, p. 286.
- Welsh, J A and White, J F 1981, 'A Small Business Is Not a Little Big Business', *Harvard Business Review*, vol. July-August 1981, pp. 1-7.
- Weston, J F and Brigham, E F 1974, 'Essentials of Managerial Finance', Third Edition, *The Dryden Press*.
- Whitebirch Software, Inc., 2003-2010, viewed 20 January 2011, < <http://whitebirchsoftware.com/frnt/products.jsp>>.
- Wijewardena, H, Zoysa, A D, Fonseka, T and Perera, B 2004, 'The Impact of Planning and Control Sophistication on Performance of Small and Medium-Sized Enterprises: Evidence from Sri Lanka', *Journal of Small Business Management*, vol. 42, no. 2, p. 209.
- Wiltbank, R, Dew, N, Read, S and Saravathy, S D 2006, 'What to do next? The case for non-predictive strategy.', *Strategic Management Journal*, vol. 27, no. 10, pp. 981-98.
- Winch, G W and Arthur, D J W 2002, 'User-parameterised generic models: a solution to the conundrum of modelling access for SMEs?' *System Dynamics Review*, vol. 18, no. 3, p. 339.



- Winch, G W and Bianchi, C 2006, 'Drivers and dynamic processes for SMEs going global', *Journal of Small Business and Enterprise Development*, vol. 13, no. 1, p. 73.
- Wolcott, H F 2001, 'Writing up qualitative research', *Thousand Oaks, Calif. : Sage Publications*, vol. 2nd Edition.
- Wong, K Y and Aspinwall, E 2004, 'Characterizing knowledge management in the small business environment', *Journal of Knowledge Management*, vol. 8, no. 3, p. 44.
- Wong, K Y 2005, 'Critical success factors for implementing knowledge management in small and medium enterprises', *Industrial Management + Data Systems*, vol. 105, no. 3/4, pp. 261-80.
- Yap, C S and Thong, J Y L 1997, 'Programme evaluation of a government information technology programme for small businesses', *Journal of Information Technology*, vol. 12, no. 2, pp. 107--20.
- Yin, R K 1981, 'The Case Study Crisis: Some Answers.' *Administrative Science Quarterly*, vol. 26, no. 1, pp. 58-65.
- Yin, R K 2003, 'Case study research: design and methods', *Thousand Oaks, Calif.: Sage Publications*, vol. 3rd edition.
- Xero.com, *Online Accounting System*, viewed 20 January 2011, < <http://www.xero.com/>>.
- Zikmund, W G 2003, 'Business Research Methods, 7th Edition', *Thomson South-Western*.

## Appendix A - Software Development Chronology

Table 16 that follows shows the stages in the development of the software program.

Dates	IPC Model Development Chronology
<b>Mid to end October 2008</b>	Decided to use FileMaker Pro Advanced® software for prototyping. Starting the Software Development with preliminary design of Entity Relationships (this process was on-going throughout), developing techniques to import data from MYOB including setting up the Mapping Scheme concept, initial layouts for General Ledger (GL) line item scheme. Creating the Generic Chart of Accounts initially in Excel™ and then imported into FileMaker.
<b>Mid to end November 2008</b>	Scripting data simplification from Trial Balance data. Designing predictions layout and developing the first prediction Method. During this period and through several months, there was the need to become familiar with the FileMaker programming language.
<b>December 2008</b>	Working on layouts to display GL Line Items to suit perceived user needs. Data input methods research. Investigating methods to enable calculation between GL accounts. Developing Methods 3 and 4. Improving navigation between layouts. Writing data input script and testing.
<b>February 2009</b>	Input Bardak data for all of 07/08 (12 months). Writing data error script and producing the Error Report. Designing an appropriate method to generate Financial Reports. Preliminary scripting of Profit and Loss routine with testing using Bardak data. Working on Methods 5,7 and 8.
<b>March 2009</b>	Working on the Balance Sheet report. Testing the forecasting methods. Developing technique to show either past data or predicted data on the same line according to the selected “prediction start month”. Planning method for conducting case studies. Writing other Methods 7, 8 and 9. Setting up layout for Capital Budgeting.
<b>April 2009</b>	Developing the GST script. Wrote Methods 10,13 and 14. Designing method to calculate the Cash when all other GL Line Item predictions are completed. Solving the problem with how to deal with YTD Profit and Loss. Software navigation design and implementation. Beginning the research on using the Web viewer and web based software to produce graphs within the FileMaker program. (Creating and submitting Ethics proposal as well in this month.)
<b>May 2009</b>	<p>Researching the problem of how to handle multiple companies/branches in a secure manner using the one program file. (i.e. Must ensure that it cannot be possible for one data set to be mixed or viewed from another data set. In FileMaker the program and data are integral within the one file.)</p> <p>Working on a method to enable the program to be updated. Data needs to be transferred from the old file to the new updated “clone” file.</p> <p>Several attempts at Graphing until a design developed to handle the process via a Google application that was discovered after research. At this stage the program is up to version 23. Used Private data to test the multiple company/branches system. Using my own user experiences to assist with the user interface and functionality of the program. Creating a new mapping</p>

Dates	IPC Model Development Chronology
	<p>scheme for the second “company” and importing Trial Balance data for January 2009. Time to export data from MYOB was 13mins. Time to import the six Trial Balances to the IPC Model was 6mins.</p> <p>Re designing the concept of how to deal with the GL Line Items where there is actual and predicted data. Establishing the link between the Mapping Scheme and the Predictions Table. This was a new design philosophy. Re-importing the Private data to test. Extensively improving the Mapping Scheme routines and functionality. Adding control scripts to add, delete and amend records that impact on the Predictions Table and the GL Line Items Table. Improving the overall usability.</p>
<b>June 2009</b>	<p>Testing with two data sets. Fixing user un-friendly parts and bugs. Improvement to look and feel of program. Testing and then improving graphs within various sections of the program. Writing some function scripts. Created script that converts raw data via relationships to the array format that then carries throughout the program. Developing the concept of the Data Viewing Mask. Writing paper for ACIS2009 conference. Helping a company with their accounting with a view to them becoming a case. Interesting to develop their business model. Experience influenced the design used in the IPC Model. [In the end, the test company was not suited to becoming a case due to exceptionally poor management and an unwillingness to have their bookkeeping maintained professionally and to take a serious interest in planning. Surprisingly the owner’s response to the business model concept was good and insightful. The owner could clearly express his vision but could not be bothered with the numbers.]</p>
<b>July 2009</b>	<p>Developing the Capital Budgeting system. Testing the program with Bardak and Private forecasting. Using these cases in “live” mode for the first time. Improving the Financial Reporting and enhancing some of the Methods and Graphing. Developing Mixed Method no. 16.</p>
<b>August 2009</b>	<p>Developing the business model section of the program. Test with Bardak and one of the contestants in the Business Plan Competition. Commenced the analysis part of the program – the Results section. Devised the 12 Key Performance Factors. Developing a scoring scheme for the Results section.</p>
<b>September 2009</b>	<p>Scripting 12 Key Factors and associated Graphs. Developing trend analysis (least squares fit) and moving average scripts associated with the graphs. Working through one factor at a time. Continuing with test cycles (each month) for Bardak and Private accounts. Two cycles completed. Correcting programming bugs as we go.</p> <p>Approached one of the owners of a business that could become the first case. Research method planning. E.g. recording of each session.</p> <p>Improving the way that the Cash result is calculated in Method 15 particularly where the Financial Reports interact. [e.g. Need to first run the financial reports routine to calculate the YTD Profit and Loss but then the Financial Reports cannot be completed until the Cash is calculated in the Predictions Table.</p>
<b>October 2009</b>	<p>First Case Study – Case 3 commences. Working with version 38 of the program. Scripting and writing beta program Licence Agreement. Researching methods to create runtime version of the program. Transcribing first interview.</p>

Dates	IPC Model Development Chronology
	Installing a security login system for the program. Creating the Forecasting Hub. Completing cycle 3 for Bardak and Private data. These entities provide an excellent test base to highlight areas requiring program improvements. Difficulties encountered with the program updating method. Developing the business model with Case 3 – refer to the Case 3 chronology.
<b>November 2009</b>	Completing the program update routine. Tackling the runtime version problem. Thinking about the “sliding periods” problem. Incorporating custom functions into the program. Course on Qualitative Analysis. Cycle 4 of Bardak and Private accounts resulted in modifications to the Results section of the program.
<b>December 2009</b>	Development of “sliding periods” scripts. Completing a systematic test of 22 different scenarios where the periods were changed or needed to be restored. Improving many program functions as a result of experience gained in dealing with data from Cases 1, 2 and 3. Most changes related to the business model and the Financial Reports sections. The interface between actual and predicted data, especially when sliding periods along, was much more complicated than first thought. The speed of data manipulations was pleasing. For example, exporting from MYOB and re-entering Trial Balance data for 3 months in Case 2 (Private) took just 7 mins.
<b>January 2010</b>	<p>Developing technique to handle carry forward (YTD) Profit and Loss at the interface between actual and predicted data.</p> <p>(Note that initially the program was written assuming the OM was starting with month 1 and no past data. Once actual data begins to accumulate and the predictions are revised, the interface between actual and predicted becomes critical. You cannot maintain the original forecast without taking into account what has happened. In each GL Line item the starting point changes depending on the selected month of transition between actual and predicted.)</p> <p>Improving the presentation of the Financial Reports. Completing cycle 6 for Bardak and Private where predictions are modified. Improving Method 8 as a result of experience with Case 1. Meeting 7 with Case 3.</p> <p>Some Methods had to be modified to cater for the sliding periods facility.</p> <p>Adding the calculation of tax with parameter input of Carried Forward Losses. When there are past losses tax is not applicable until the losses are absorbed by later profits.</p> <p>Further work on developing the runtime version.</p>
<b>February 2010</b>	Improving the GST scripts to correctly handle the interface between actual and predicted in the sliding periods environment. Improving usability of Financial Reports by providing a progress bar when calculating. This change was prompted by a request from Case 3’s user. Improving the Loans and Depreciation Methods. Testing sliding periods on Case 3 data. Completing Factors 5 and 8 in the Results section of the program. Meeting with two business owners re becoming Case Studies. Satisfactory testing of sliding periods with multiple companies in the same program file. Bardak testing. Bookkeeper entered data into November 2009 causing January’s data not to balance. Re-entered data from November to January. Improvements made to business model section of program based on experience with Case 3. Completion of script to set up client program files with static data included,

Dates	IPC Model Development Chronology
	<p>security set and login details. Set up database file to record build numbers and revisions made to each version. The starting beta version of the program is v50. The data base also records which build each “client” has and when upgrades were issued.</p> <p>Still working on update method for runtime versions of the program.</p>
<b>March 2010</b>	<p>Establishing two new Cases. (Nos. 4 and 5). First time hand over of the program file for use externally - Case 3. Using Bardak Super Fund (BSF) as Case 6 to test the set up of a client runtime program file with static data and then to test a completely different type of entity where the Mapping Scheme allows for considerable aggregation of MYOB accounts. The test was successful and this entity will be using the program each month along with the other early cases, Bardak and Private accounts. Setting up electronic filing system for “client” (Case) files that records the Build No. and version date/time in the client’s own file. Writing up Chapt 4 of the thesis. Demonstrating the program with two city based accounting firms. Reception positive. Testing the Update Program routine on runtime versions of the program. Testing sliding periods on Bardak and Private – Cases 1 and 2. Writing a set of instructions for creating client runtime and native FileMaker versions of the program and for client updating the program.</p>
<b>April 2010</b>	<p>Commencing the Windows 7 version of the program. Examining Case 4’s QuickBooks® data. Thinking about how to do QuickBooks® version of the program. Continuing with writing Chapt 4 of Thesis including literature search and study. Continuing with Case 3 interaction. Interacting with beginning Case studies 4 and 5.</p>
<b>May 2010</b>	<p>Setting up informal Case 8 as a Mac OS runtime version, which is an application of the program for a private individual. Test the ability of the individual to operate the program with little instruction. Preliminary meeting with candidate for Case 9. This Case would need the program to be delivered in runtime version and able to operate in the Windows 7 environment. Results scores for Cases 1 and 2 were 67% and 78% respectively.</p>
<b>June 2010</b>	<p>Writing script for new Method 17 that calculates Superannuation and percentage of other GL line items as selected.</p> <p>Using Case 8, for the first time set up an operating budget over the full 24 months with no past data. Noted at the time that the runtime version of the program on the Mac OS X operating system appeared to be very robust.</p> <p>Set up Case 9 (fourth external Case). Encountered difficulties with Cases not being available for scheduled meetings on the day. Writing paper and abstract for HDR Colloquium.</p> <p>Installing a demonstration version of QuickBooks® in order to be able to examine the Case 4 data files.</p>
<b>July 2010</b>	<p>Writing paper. Developing Case 4’s Mapping Scheme. Writing data input script for QuickBooks®. Case 4 did not turn up for first meeting. Other existing Cases continue as normal. Bardak and Private (Cases 1 and 2) in operation for over 12months (12 cycles) and Case 3 for 8 months (8 cycles). In Case 4, created account numbers and entered them into the test data file, input the</p>

Dates	IPC Model Development Chronology
	Mapping Scheme and then completed entering all of the QuickBooks® data from Jul 08 to June 09 using a Mac version of the program. Sent the results to Case 4's owner.
<b>August 2010</b>	<p>Creating the Windows 7 version of the program. Editing 65 layouts to cater for different operating system. Problem with print scripts where Windows does not generically support scaling of the printout. Wrote a work around such that the user can set the scaling after the program advises what needs to be set.</p> <p>Changing 27 navigation scripts to position the program layouts within a window not with respect to the screen dimensions and resolution.</p> <p>First meetings with Cases 5, 4 and 9. Preparation of their runtime versions. First external delivery of Windows 7, runtime version of the program to Case 9. Writing proposal to attend ACIS Consortium.</p>
<b>September 2010</b>	Program further development put on hold for a while whilst analysis of case studies underway. Policy is that only essential errors to be corrected. A log of not critical program improvements is being maintained. Up until end October 2010 there have been no changes required to the program.

**Table 21 - IPC Model Software Development Chronology**

## Appendix B – Analysis Concepts Matrix

CONCEPTS MATRIX	Efficacy of the Software - User's Perceptions			Impact on the OM's Management Control Mindset				Factors Affecting Adoption			
	1. Accounting preconceptions	2. Software usability	3. Software improvement perceptions	1. OM thinking strategically about the business	2. Catalyst for accounting system improvements	3. Forward looking mindset leads to adaptive control	4. Knowledge development	1. Commitment to the implementation process	2. User knowledge and the role of external professionals	3. Status of the accounting system & IT infrastructure	4. Business maturity and complexity
1. Accounting preconceptions	74	19	4	7	27	21	7	2	22	30	6
2. Software usability	19	137	9	13	18	38	7	0	21	16	5
3. Software improvement perceptions	4	9	58	1	5	3	1	0	2	3	3
1. OM thinking strategically about the business	7	13	1	78	7	27	7	3	11	3	11
2. Catalyst for accounting system improvements	27	18	5	7	58	14	6	1	20	28	6
3. Forward looking mindset leads to adaptive control	21	38	3	27	14	122	9	1	14	16	11
4. Knowledge development	7	7	1	7	6	9	27	0	7	5	4
1. Commitment to the implementation process	2	0	0	3	1	1	0	26	9	7	8
2. User knowledge and the role of external professionals	22	21	2	11	20	14	7	9	100	24	16
3. Status of the accounting system & IT infrastructure	30	16	3	3	28	16	5	7	24	87	24
4. Business maturity and complexity	6	5	3	11	6	11	4	8	16	24	82

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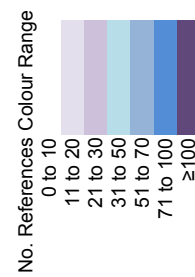


Table 22 - Concepts Matrix for Case Study Data

## Appendix C – Fitness Studio - Chronology of the Adoption Process

Chronology for 1 <sup>st</sup> Case – Fitness Studio	
<b>Session 1 – 7/10/09</b>	<p>This was a semi- structured interview with the main questions being:</p> <ul style="list-style-type: none"> <li>• What is the present business structure and business history;</li> <li>• What management control systems are currently in place.</li> </ul> <p>The interview was transcribed for later analysis.</p> <p>Bruce was shown the process flow chart. He had no problem in understanding the concept. He liked the 12 performance factors and commented that he does not look at this balance sheet (or PandL) each month, but mainly concentrates on cash flow, sales composition and trends. He was impressed with the graphs.</p> <p><i>Duration: 56 minutes.</i></p>
<b>Sessions 2and3 – 23and26/10/09</b>	<p>The Mapping Scheme was developed in these two sessions. Both sessions were transcribed and notes taken.</p> <p><i>Duration: 4 hours.</i></p>
<b>Follow up from sessions 2and3</b>	<p>The researcher exported all the Trial Balances for 12 months from MYOB. It took 16 mins. Bringing in data to IPC Model took another 16 mins. There were some error reports generated because new accounts had been created in MYOB during the year. The Mapping Scheme needed updating with 5 accounts (only). The process is normal and part of the program design.</p> <p><i>Duration: 39 mins.</i></p>
<b>Session 4 – 20/11/09</b>	<p>Whilst it was a satisfactory session where I showed Bruce how to import the Mapping Scheme and some data, Bruce had miss labelled the MYOB Excel™ data file so that when the file was opened, the Trial Balance was not the correct month. Also there was another problem with the data as Bruce had used “rounding to nearest dollar” in MYOB. This meant that all the Trial Balances in IPC Model had to be adjusted to ensure that the Trial Balance balanced. There were some problems with the program regarding the production of the Financial Reports but fortunately, we ran out of time and did not continue onto the Financial Reports. The field notes show that working with sliding periods was still being coded at this time. Amendments to the Financial Reports programming were made shortly after this session.</p> <p><i>Duration: 1hr 12mins.</i></p>
<b>Session 5 – 9/12/09</b>	<p>This is the session where Bruce was introduced to the business model sections of the program. There was much discussion throughout this session. Also Bruce explained why he would like a web-based program. The session was transcribed.</p>



Chronology for 1 <sup>st</sup> Case – Fitness Studio	
	<i>Duration: 3hr 8mins.</i>
<b>Session 6 – 16/12/09</b>	<p>In this session the forecasting phase was commenced. Bruce was very careful with his sales forecasting and if anything, was cautious in his approach. He liked to use the pop-up memo field to record his assumptions. He also said that he liked the auto calculation of the predictions.</p> <p>The field notes show that a lot of minor changes to the program were required to improve its functionality.</p> <p>This is the stage where the importance of correctly programming the interface between actual and predicted data as the data period is changing became apparent. The new prediction has to take the last actual data point entry as the start each time. This is especially important for the carry forward profit and loss.</p> <p><i>Duration: 2hr 26mins.</i></p>
<b>Session 7 – 20/1/10</b>	<p>This session was devoted to forecasting the PandL GL Line Items. Hand-written notes were taken for later analysis.</p> <p>Firstly we confirmed that the sales forecasts made in the previous session were reasonable. The basis for the predictions was 2-3% growth per month for the small group with the others being steady. (In hindsight, as of Sept 2010, it turned out that the education section of the organisation grew much more rapidly than envisioned at this meeting.)</p> <p>After a little while, Bruce became quite adept at making predictions. The procedure was to firstly look at the graph in the separate window, secondly select a method, thirdly to run the method and then fourthly to re-display the graph to see if the prediction made sense. If not the procedure was repeated. Bruce mainly used methods 0-3.</p> <p>Other matters dealt with in the meeting included the problem with owner's loans vs equity and forecasting the Balance Sheet where details were needed of lease agreements, depreciation schedules and the like.</p> <p>The P&amp;L predictions from November 2009 to June 2010 were completed. At this stage Bruce said that he expected a YTD profit of approximately \$50,000 but only predicted using the IPC Model, half that amount. He was going to think about why and went away with the P&amp;L financial report printed in colour. (In fact the net profit for the year ended 30 June 2010 was \$108,000.) What this is showing it that Bruce really did not have a good idea of where the company was going before being introduced to the IPC Model.</p> <p><i>Duration: 2hr 29mins.</i></p>
<b>Meeting cancelled - 27/1/10</b>	<p>Bruce cancelled our meeting. He had not been able to get together his data for the Balance Sheet. These data included loans, lease schedules, the assets register and details of depreciation schedules. It is either quite a lot of work for someone within the organisation or the data had to be obtained from Bruce's accountant.</p>

Chronology for 1 <sup>st</sup> Case – Fitness Studio	
	<p>At this stage he felt that the only way to improve the business was to know about the profitability (Gross Margin) of each separate product group so that he could focus on the winners and at the same time, know how much his “loss leaders” were costing him.</p> <p>Whilst this comment was pleasing to hear after earlier meetings, it means that there has to be an add-on to the Financial Reports that would require more programming time. In the interim, I was content (as a temporary measure) to move that data to a spreadsheet and calculate the detailed Gross Profits there.</p> <p><i>Duration: 20 mins.</i></p>
<b>Session 8 – 3/2/10</b>	<p>The process of forecasting the balance sheet was much slower than I expected. Bruce and I stopped to discuss each line item in some detail. He sometimes would press the wrong button and we would have to do it again but the program did not crash. The experience was quite acceptable.</p> <p>In balance sheet method 6, the algorithm was not sufficiently intelligent. It would allow for a value to be entered for a specified number of months but did not pick up the starting value of the previous month. Also if the forecast is for the first month, it needs to ask the user for the starting amount. This is the nature of balance sheet forecasting. It is additive not absolute. Later in method 16, the balance sheet algorithm was modified to be even smarter in that it allows the user to leave in the underlying original data and add to that in a stepwise fashion. These features were included in the program following the field experience.</p> <p>At this point in the process, I was concerned about getting the software to work in a Runtime version and whether I could write a satisfactory update procedure. (Later I was able to conquer this problem.) I questioned whether the software could be distributed with the client needing to buy FileMaker™. Bruce said that he did not see a problem with this. He said that he would probably use the FM software in his other two businesses anyway.</p> <p>He thought that the program was quite detailed and would not be used by people who were not familiar with the double entry accounting system. He thought that people without accounting knowledge would use their accountants. In that case, accountants could buy the software with several licences for each of their clients that they would be serving.</p> <p>People like Bruce would want three licences, one for each of his business entities.</p> <p><i>Duration: 3 hours.</i></p>
<b>Session 9 – 10/2/10</b>	<p>In this session we were still completing the balance sheet plan but it was a relatively quick process to finish. It became obvious that Bruce needed a method that calculated Superannuation Guarantee (which is currently 9% of all the wages and salaries accounts). Later this became Method 17 that not only calculated Superannuation but also calculated a percentage of</p>

Chronology for 1 <sup>st</sup> Case – Fitness Studio	
	<p>any one or a selected group of GL Line Items.</p> <p>When we finished and started to calculate the cash, the production of the financial reports took too long. Bruce asked for a progress bar to be included. This was implemented before the next meeting.</p> <p>The result of the plan, which is indicated in the long-term cash flow, showed the cash going negative. Bruce was surprised at the result. An analysis of major cash movements in the balance sheet showed that Bruce had been too ambitious in paying off debt such as a wage payable, Superannuation, PAYG Withholding (for the company) and BAS payments in arrears. When they were all added up, the cash outflow over the forecasting period had to be of the order of \$100,000.</p> <p>This explained why the cash predicted at the end of year was negative \$82,000.</p> <p>Bruce talked about going to the bank to get a loan to pay off all his taxation debts and then pay less interest. He would then have only one line of credit that could be steadily reduced. I said that the IPC Model could be used to show the bank that the company is well managed and (more importantly) how long it is expected to take to pay off the bank loan.</p> <p>Bruce told me that he pays off debt (loans and back tax) whenever he has the cash available. He said that it was a reactionary, opportunistic approach. When he starts forward projecting, he realised that the cash was just not there. The interpretation from this comment is that the IPC Model was doing its job!</p> <p><i>Duration: 2hr 32mins.</i></p>
<b>Session 10 – 17/2/10</b>	<p>In this session we brought in the data to December 2009 and went through the Results and Analysis cycle. The following are notes made following the meeting.</p> <p>Bruce is starting to think much more strategically about his business. His understanding of fixed and variable costs has improved. He realises that he had underestimated sales levels in his first attempt at predictions. He told me that he is taking his “IPC work” to his next board meeting. He will re-do his predictions up to the end of December 2010 now. Next week we planned to bring in the January 2010 data.</p> <p>An observation was that for Bruce, it seemed that it was better to look at the 12 Performance Factors first, before then going onto the Results section of the program. Bruce liked the “Wait while the IPC Model is calculating window” added since last meeting in response to his observation.</p> <p>He also said, “I would not be coming here every Wednesday if I wasn’t getting value out of it.”</p> <p><i>Duration: 2hrs 14mins.</i></p>

Chronology for 1 <sup>st</sup> Case – Fitness Studio	
<b>Session 11 – 24/2/10</b>	<p>Bruce will buy FileMaker 10. He has taken away his own copy of the software. We did sliding periods to move the forecasting period from ending in June 2010 to December 2010. Now he has to extend his predictions to December 2010. He will use the output from the program for his next board meeting.</p> <p><i>Duration: 1 hour.</i></p>
<b>Session 12 – 10/3/10</b>	<p>Phone call from Bruce. He is keen about updating his predictions. The earlier figures from the IPC Model made him question the loan repayment schedule to the ATO. He rang them and found out that there was a corrective letter and that he had been paying more than he had to by \$60,000. He is actually happy about this mistake because he wants to use the IPC Model to see if he can now pay off his tax department debt by December 2010.</p> <p>Bruce also said that he has gone back to MYOB and made changes to line up with the IPC Model. He now intends to re-enter all the past data so that his predictions make more sense.</p> <p>Interpretation: The IPC Model is influencing his day-to-day operation and understanding of the business.</p> <p><i>Duration: 30 mins.</i></p>
<b>Session 13 – 19/3/10</b>	<p>Telephone call with Bruce.</p> <ul style="list-style-type: none"> <li>• Bruce has re-entered all his past data from July 2009.</li> <li>• He has imported current data for January and February 2010.</li> <li>• He is working on his predictions bit by bit.</li> <li>• He is getting ready for the board meeting next week.</li> <li>• He has not updated his program yet. (I had sent him an update.)</li> </ul> <p><i>Duration: 30 mins.</i></p>
<b>Session 14 – 14/4/10</b>	<p>Bruce did not back up his file before doing the latest upgrade! We did the upgrade on the backup data file (one version earlier) and then had to bring in data from Jan to March 2010. Ran the Financial Reports only to find that the July data was missing. Bringing the IPC Model up to date took only about 30 mins.</p> <p>Bruce wanted to look at the graphs showing actual vs predicted. I showed him using the Financial Reports display.</p> <p>We then moved the periods along to December 2010 (for the second time). Bruce now has to re-do his forward projections for the new six-month period. The MYOB reports that he brought along did not show both “This Month” and “YTD” – only “YTD”. I think that up till now, he hasn’t used the reports from MYOB very much or does not look at them the way that the IPC Model does.</p> <p><i>Duration: 1 hour 32mins.</i></p>

Chronology for 1 <sup>st</sup> Case – Fitness Studio	
<b>Session 15 – 21/4/10</b>	<p>This session was mainly taken up with an interview where Bruce was asked his response to eight questions concerning the impact of the IPC Model on his company so far.</p> <p>Extracts from this interview are contained in section 5.2.6 (User Reaction to the Adoption Process.) The session was transcribed.</p> <p><i>Duration: 54 mins.</i></p>
<b>Session 16 – 19/5/10</b>	<p>Completed the budget to Dec10.</p> <p><i>Duration: 2hrs 29mins.</i></p>
<b>Session 17 – 25/6/10</b>	<p>This session was transcribed. It was the final meeting under the official research program. Matters dealt with were how Bruce could improve the way he was dealing with the company Visa Card, depreciation expense and the satisfactory projected profit for the year that was closing in 5 days time. Forecasting to end December 2010 was being refined. The strategy to develop the Instructor Education part of the business was discussed as well as seasonal variations in sales that are hard to model.</p> <p>Work is continuing under a commercial arrangement with the company. The IPC Model has become an integral part of the company's management control tool set.</p> <p><i>Duration: 1hr 25mins.</i></p>

**Table 23 - Fitness Studio - Chronology of the Adoption Process**

## Appendix D – Fitness Studio – User Reaction to the Adoption Process

In this appendix a précis version of the interview conducted in Session 15 on 21<sup>st</sup> April 2010. The interview is between the researcher and the OM.

- **How is the IPC Model process helpful in managing the business?**

*“It’s helping me in a number of ways. Firstly it is helping me think about specific aspects of our activity as opposed to the business just being an all in stew. For example, since I started on the project I have become more focussed on the large group activity, small group activity, private activity and [instructor] education. As sort of profit centres within the overall business. That was pretty easy with the income, but it was more complex with the expenditure because a lot of the expenditure was mixed, so ... Previous to the IPC project, I just had everything under MYOB grouped into wages and salaries. Whereas in fact, that did not help me at all because one of the major costs to anything that we do is labour and yet the one major cost was just one big conglomerated ledger - which didn’t really tell me whether any one part of the business was more profitable than another part of the business.”*

- **You said that the accountant’s view of world was different than yours?**

*“I did not realise this until I sat down with you and went through the IPC thing. It is a real problem. And the problem is that our books of account on MYOB are actually designed that way, not that they are there to support the business, they are there to meet compliance with accounting regulations and all the rest of it. In other words they are in the structure that our accountants want. The accountants, they wanted me to have an aggregated salaries and wages ledger. They did not want 15 varieties of breakdown of the difference between instructor wages compared to admin wages compared to contract wages or anything else. They want the company equity to be shown in a particular way for tax purposes. And that is all fine. I don’t have a problem with that. The problem is though it is not necessarily helpful in running a business. Before I came to you, we had income and expenditure on the P&L and that was about it. We had no cost of sales and yet there is clearly a cost of sales in a lot of the activities that we do. ... the IPC is closer to being a management tool than MYOB. MYOB is an accounting tool pure and simple.”*

- **What changes have you made to the MYOB accounting system?**

*“I have now gone back to MYOB accounting system and restructured my accounting system. And so that the information coming through that I apply to the IPC program is more specific and accurate, which I have done. The IPC program is now able to give me quite specific charts on actual behaviour compared with forecasting. That is the first major thing. So it has helped me get a focus on a restructure.”*

- **How do you find the process of forecasting?**

*“The second thing is that my forecasting is part of the one package whereas in the past, the forecasting was something that I did separately on Excel™ and it was .... and although I would then transfer in actuals after it had happened ... it was a lot of hands on. It took a long time to do it. It wasn't an automatic thing.*

*Now I just reconcile my month with MYOB, download a Trial Balance and transfer that over and there it is instantly on the chart. Adding to the graphs and everything else. So it is a lot simpler.*

*In a lot of ways the IPC program has bought together a whole lot of manually driven activities that I had done before and I know that there will be a lot of businesses out there that just don't have the time and could not have been bothered doing that in the past, other than keeping their books. They probably haven't done any forecasting because they just did not have the time to keep track of all the other material that you need to do. So in a lot of ways, it is an enabler program. It means that you can do a lot of stuff far faster.*

*I like the choices of the ways of forecasting. You can do a predictive, fixed figure. This is a fixed cost and I know my rent is fixed for the next year so that I can put that in as a fixed cost. I can put it in as a variable and it give me a chance to put in a percentage or whatever else ... so I like the range of them. There is probably more range than I personally need and the ones that I have done so far – I tend to use only 3 of them (there are 17 altogether) – but that is the type of business that I am in.*

*This is an area that is always a bit challenging with running an Excel™ sheet along side the MYOB is that they were closely related, they might be the same figures but they weren't visual. You know and sometimes to see a trend and to see a realistic trend going forward you know that you are going to get growth but you also know that you are going to have periods when you have quiet months, for me, I am the type of person who likes to not only see the figures. I like to see the charts. I like to see it visually."*

- **Have there been changes in strategy since you have been using the IPC Model?**

*"From what I have seen already we will almost certainly in the next six months will form another company and separate the education accounts out altogether because it is going to be a much bigger company on its own."*

- **Is the level of detail acceptable? Would you change the Mapping Scheme if you were to start again? Would you change anything?**

*"I am the only one that does the books of the company and the only one that does the financial forecasting and with two other businesses as well as [Fitness Studio] I was struggling. It was just too much data to have to work on. It is this sort of development in software packaging just means that you can do a lot more for less time. It is using material that is already there. This information is already in MYOB. Traditionally you just could not break it out. It took a lot of extra hours just to sit down and break it all out and you had to do it every time you did it."*

- **What do you think of being able to move your forecasting periods along in three monthly increments?**

*"Confusing at the moment but I am willing to accept that it is probably me. I am getting confused between calendar years and financial years and might just be answered in labelling. Other than that it is just clicking buttons, but that is just practice."*

Note that the problem alluded to here, was in fact fixed with labelling and is an example where user feedback was valuable to program development.

*I like the theory. At the moment we are mucking about trying to forecast just 3 or 6 months ahead but I would hope that in the next couple of months that I have got onto forecasting to Christmas 2011 so that we are a good 18 months ahead."*

- **What do other people in the organisation think of the IPC Model?**

*"They are ... if I told you that they are exceptionally excited, I would be lying to you. They don't ... all they know ... they see the board reports coming out. They are getting a*



*better representation than I have been able to deliver before. Particularly graphs. And it was that graph that I was telling you about before. All of this is part of educating them too. How to be directors and how to take a strategic view of their business. And little things like a graph that shows actuals, but also shows trend lines and averages is a big educational tool for them. And it makes it easier for me to explain to them how we are really performing over time. Not just how we have done this week or the week before. People latch onto positives and are adverse to latching onto negatives or understanding negatives.*

*The IPC Model is not there for me, I mean that it is a tool for me to use, but it is a tool that I will use for my board who are even less qualified, trained and experienced in accounting than I am – substantially less – and so one of the problems I have with my board, and I know that this is common with a lot of inexperienced boards, boards that are not from larger companies, smaller company boards. We will have a big month cash flow wise. March was a big month. We took about ... accrued sales \$170,000 in a month. \$50,000 better than we had ever done before. They are all running out wanting to buy new equipment. Ok. And I had to get the baseball bat out and club them all back into submission.*

*From a cash flow point of view. Fantastic. It's a \$25-30,000 profit month. However, when I showed them your chart, it shows the spike income and it also shows a trend line and it is the trend line that I point out to them. That it is the trend line that we need to focus on, making sure that it is on a constant upward trend but we don't want it to be full of peaks and troughs. We want the trend line to be consistently growing. Because I can assure you, that the record sales month is usually quickly followed by one in the other direction. There are usually reasons why ... So I think that I ... I never had the time to do with doing reports off Excel™ spreadsheets or whatever."*

*-oOo-*

## Appendix E – Fitness Studio – Business Model

Table 18 below is a slightly edited (excluding confidential information) version of Bruce’s Business Model in the format that is displayed and printed from the IPC Model. Note that the emboldened words are the selected answers from a list of alternatives that appear in the program.

BUSINESS MODEL FOR FITNESS STUDIO		
MODEL COMPONENT	RELEVANT FACTORS	FURTHER COMMENTS
<b>Factors relating to the offering</b>	We sell <b>primarily services</b> as opposed to products or a mixture of both.	We provide a range of services, which include Large Group, Small Group and Private (Fitness) Classes and Instructor Training to international certification standard.
	The offering is <b>standardised.</b>	Our services have been refined over 3 years in the service provided, the way that the service is delivered and the pricing strategy of our services.  For example, we started out as a Membership business but quickly realised that this limited the accessibility of potential customer, so we broadened our product range to include multi-passes, casual and direct debits and over-the-counter sales.  The current range of Large Group, Small Group and Private services regularly attracts 800 users per week. There is capacity for up to 1100 users per week.
	The scope is <b>narrow line.</b>	A deliberately limited main service range but a number of sub-service choices. For example we offer different prices depending on the method of payment. Regular automatic weekly payment is the cheapest, a 10-pack multi-pass or single casual purchase which is the most expensive.

BUSINESS MODEL FOR FITNESS STUDIO		
	Customers can purchase <b>access to product (not the product itself)</b> via rental, licence or other arrangement.	We are a stand-alone business. We did consider working with AAA but they under-valued our services and complicated the offer.
	We deliver services <b>using internal resources</b> .	
	Customers are serviced by <b>distributing directly to the end user</b> .	
<b>Market factors</b>	Our market structure is described as <b>B2C (Business to Customer)</b> .	
	Our territory is <b>national</b> .	Local for Large Group, Small Group and Private. National for Instructor Education.
	Our customers are <b>consumers</b> .	
	We supply into a <b>niche market</b> .	
	The firm's success is driven by a focus on <b>on-going relationships</b> with particular accounts.	Developing on-going relationships is critical to our success.
<b>Internal capability factors</b>	Internal competency in <b>both production and operations</b> .	High quality and capable instructors. Experienced and self-starting reception and management.
	Advantage from our <b>selling/marketing</b> expertise.	Very experienced in selling and marketing to our market. A load of experience based on trial and error.
	Advantage from <b>data mining capabilities</b> .	We use XX-Online as our main management and measurement tool. We have kept all customer records and customer behaviour since start-up.

BUSINESS MODEL FOR FITNESS STUDIO		
	Advantage from our <b>creative or innovative capability.</b>	We constantly review our performance with an eye to creating greater capacity through technology. In the past 12 months 60% of our income has shifted from over-the-counter to online buying allowing use to reduce reception staff costs by 20%. There is room for further improvement.
	Advantage achieved through <b>financial transactions/arbitrage.</b>	We have a stable financial management system but prior to the IPC system it was hardly sophisticated.
	Advantage from supply change management skills is <b>not applicable.</b>	
	Advantage from <b>skills in managing networks.</b>	A major focus is on repeat sales and referrals, so developing our network is vital.
<b>Competitive strategy factors</b>	Differentiation from <b>other image factors.</b>	We set ourselves apart by actually being distinctly different from competitors. No loud music, no corporate image. It is all about the experience.
	Differentiation from <b>product or service quality.</b>	High level of care and instruction in a high quality surrounding.
	Differentiation from <b>innovation leadership.</b>	There is no one in Melbourne who is attempting to do what we do. We want to become a multi-site business.
	Differentiation from <b>other operational factors.</b>	We are expensive but provide value for money and have evolved our prices in line with what customers will pay.
	Differentiation from <b>intimate customer relationships/experience.</b>	This is very important.
<b>Economic factors</b>	Pricing flexibility is <b>largely fixed.</b>	
	Revenue sources are <b>mostly fixed.</b>	

BUSINESS MODEL FOR FITNESS STUDIO		
	The underlying cost structure is <b>balanced between fixed and variable costs.</b>	
	Sales volumes (invoice volumes) are <b>high.</b>	
	Gross margins are <b>medium. (30-50%).</b>	
<b>Personal/investor factors</b>	Aspirations for the firm are best described as a <b>growth model.</b>	The benefit of the original single site is to create a profitable model for a multi site expansion.

**Table 24 - Fitness Studio Business Model**

## Appendix F – Business Success vs Failure Prediction Model

The model will predict a group of businesses as failed or successful (based on profitability) more accurately than random guessing in three countries (USA, Croatia and Chile) over 96 per cent of the time.

Category	Explanation
<b>Capital</b>	Businesses that start under capitalised have a greater chance of failure than firms that start with adequate capital.
<b>Record keeping and financial control</b>	Businesses that do not keep updated and accurate records and do not use adequate financial controls have a greater chance of failure than firms that do.
<b>Industry experience</b>	Businesses managed by people without prior industry experience have a greater chance of failure than firms managed by people with prior industry experience.
<b>Management experience</b>	Businesses managed by people without prior management experience have a greater chance of failure than firms that are managed by people with prior management experience.
<b>Planning</b>	Businesses that do not develop specific business plans have a greater chance of failure than firms that do.
<b>Professional Advisors</b>	Businesses that do not use professional advisors have a greater change of failure than firms using professional advisors. A more recent source of professional advisors is venture capitalists.
<b>Education</b>	People without any college [tertiary] education who start a business have a greater chance of failing than people with one or more years of college education.
<b>Staffing</b>	Businesses that cannot attract and retain quality employees have a greater chance of failure than firms that can.
<b>Product/Service Timing</b>	Businesses that select products/services that are too new or too old have a greater change of failure than firms that select product/services that are in the growth stage.
<b>Economic Timing</b>	Businesses that start during a recession have a greater chance of failing than firms that start during expansion periods.
<b>Age</b>	Younger people who start a business have a greater chance of failure than older people starting a business.
<b>Partners</b>	A business started by one person has a greater chance of failure than a firm started by more than one person.

Category	Explanation
<b>Parents</b>	Business owners whose parents did not own a business have a greater chance of failure than owners whose parents did own a business.
<b>Minority</b>	Minorities have a greater chance of failure than non-minorities.
<b>Marketing</b>	Business owners without marketing skills have a greater chance of failure than owners with marketing skills.

**Table 25 - Success versus Failure Model (Lussier & Halabi, 2010)**