Key Performance Indicators for Goal Attainment in Dairy Farming: Essential Elements for Monitoring Farm Business Performance.

A thesis submitted in partial fulfilment of the
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Abstract:

The family farm is the predominant business structure within the New Zealand dairy industry. Owner-operator farms represent two thirds of the total industry. This business structure is often complicated because of the intricate interaction between business and family requirements. This research investigated whether owner-operator dairy farmers were using performance indicators that represented goal attainment. Detailed business analyses and discussions took place on ten farms. Only two farming couples had developed formal business plans including vision and mission statements. Only one of these farms was actively implementing strategic management. Amongst the remaining farming couples goal identification ranged from no identification to well defined goals. Most identified goals were of a strategic nature yet there was no strategic management in place to monitor their progress. The lack of strategic management seen amongst farming couples is possibly relates to their locus of control. To alter the locus of control a better understanding of individuals perceptions of success and control needs to be gained so that knowledge and skill deficits can be identified. Nine of the ten farming couples had an incomplete view of their business, which reflected the operational and tactical management focus. The business analyses highlighted that the area that was of the greatest concern to farm business health was the cost of capital, in particular the cost of equity. Most farming couples struggled to relate the analysis results to their goals, which again reflected their operational and tactical management focus. The Balanced Scorecard was introduced as a strategic planning tool for farmers, however, its effectiveness could not be tested because of the lack of strategy amongst the farming couples. The Balanced Scorecard was able to provide a framework to assist in the understanding of strategic management and its importance to holistic farm business management.

Keywords: strategic management, goal attainment, strategy, dairy farmers, Balanced Scorecard

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1 Introduction

In the 1997-98 season, the New Zealand dairy industry produced 893 million kilograms of milksolids. On average 95% of New Zealand's dairy production is exported, this is in stark contrast to the rest of the world where only 7% of total world production is exported. New Zealand's export volume represents 26% of the total world amount available for export, this second only to the European Union at 50%.

New Zealand's dairy production is generated from 14,673 herds, with an average size of 220 cows milked on 87 effective hectares. The number of dairy herds in New Zealand is on the decline yet the total herd is steadily increasing indicating that the average herd size is growing. Of all the herds, 6,458 or 45.7 percent are between 100 and 199 cows in size however, the number of herds with more than 300 cows is increasing steadily.

The dominant business structure within the industry is the owner-operator structure (including leased farms), representing 63% (9,263 herds) of the total industry. However, the owner-operator group is characterised by having both the smallest herd sizes and the least effective area (Table 1). Given the dominance of the owner-operator structure within the New Zealand dairy industry it is an obvious choice to investigate this section of the industry as they issue specific related to their operating structure.

Table 1 The 1997-98 operating structures within the New Zealand Dairy Industry. (Source: LIC, 1998).

Operating structure	Number of Herds	Avg. Herd size	Avg. Effective area (ha)	Avg. total production (kg MF+MP)
Owner-operators	9,263	202	82	57,866
Contract milkers	172	270	103	76,941
All sharemilkers	5,238	250	97	72,651
Total farms	14,673	220	87	63,367

The family farm is a complex business due to the intimate interaction between business and lifestyle goals. Often these goals conflict and the farming family must reach some sort of compromise in meeting goals. This is not an easy task: it creates a dilemma for both farmers and their advisors, as there is uncertainty as to what the measurement of success should be. The traditional methods for measuring farm success have been financial and production based. Personal and family goals are rarely contemplated and receive little attention with respect to measuring business progress and success.

A vast array of financial and production based performance indicators and benchmarks for farming are reported in the literature (Boehlje, 1993; Polson *et al.*, 1997). Financial management textbooks also have sections devoted to benchmarks. These performance indicators focus on liquidity, solvency, profitability, capital efficiency, labour efficiency, debt servicing capacity, revenue generation, savings behaviour and cost composition (Shadbolt, 1998; Parker, 1997; Polson *et al.*, 1997; Boehlje, 1994; Holmes and Wilson, 1987). Production benchmarks include output measures such as production per hectare or production per kg dry matter (grown or consumed) and input measures such as fertiliser applied, herd health measures, herd fertility measures and sustainability and environmental measures. However, as each business is unique in its goals and objectives, relevant key performance indicators need to be identified for each business. These measures must represent the complete goal spectrum of each family farm business.

The objectives of this research are to demonstrate that dairy farmers do not have adequate performance indicators to measure progress towards goals. This will be achieved through the following:

- Identify farmers' goals, these may be formally or informally prepared.
- Critically assess and evaluate existing performance indicators for their strengths and weaknesses in controlling and monitoring business and lifestyle goal attainment.
- Develop and apply appropriate performance indicators to meet specific goals.

- Investigate the use of the balanced scorecard as a tool to help identify goals and key performance indicators.

1.1 Thesis Outline

Chapter two consists of the literature review which covers background material relevant to the research. It covers the topics of planning and control, value and goal identification and their implications on planning and control. The Balanced Scorecard is introduced as a strategic planning tool and the concept of benchmarking is discussed with some primary industry benchmarking projects evaluated. Finally financial and physical indicators are reviewed and explained in detail.

Chapter three describes the methodology undertaken during this research. It briefly covers theory on the case study method. The process undertaken throughout the research is also described.

Chapter four contains the results. First the individual farms are described and the analyses of their businesses are presented. The second part of the results describes the reactions and perceptions observed when interviewing the farmers and while presenting the business analyses to the farms.

Chapter five, the discussion and conclusion, aims to draw together and assess the findings and their implications. The latter relate not only to farmers but to those involved in farm extension and offering business management advice to farmers.

2 Literature Review:

2.1 Introduction Management Overview

2.1.1 What is management?

Management involves the coordination and integration of all resources of a business, both human and technical, to accomplish specific results efficiently. There are three major components to management: planning, implementation (organising and leading) and control (Robbins & Mukerji 1994). The basic management functions can be represented diagrammatically in Figure 1.

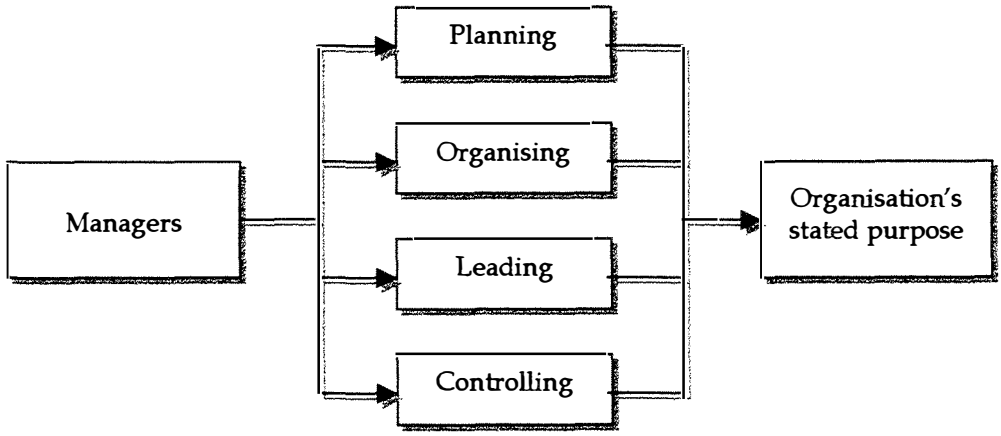

Figure 1 Management Functions. (Source: Robbins and Mukerji 1994).

Barnard and Nix (1982) use a broader definition for farm management by highlighting the role of decision making, which they see as being the essential role of management. Decision-making is required for all stages of planning and control whether it be on a day to day basis or longer-term. The owner operator farmer is often the sole decision maker in the business and must assimilate information from many spheres of activity (Figure 2). For example determining the best use of capital resources, where to obtain capital, when to replace machinery, how to get the best from the labour source, and what crop or class of stock to run. The farm manager is often the only decision maker in the business. Hence, compared to their corporate colleagues they are faced with making all decisions and in the majority of cases are unable to delegate managerial tasks to sub managers.

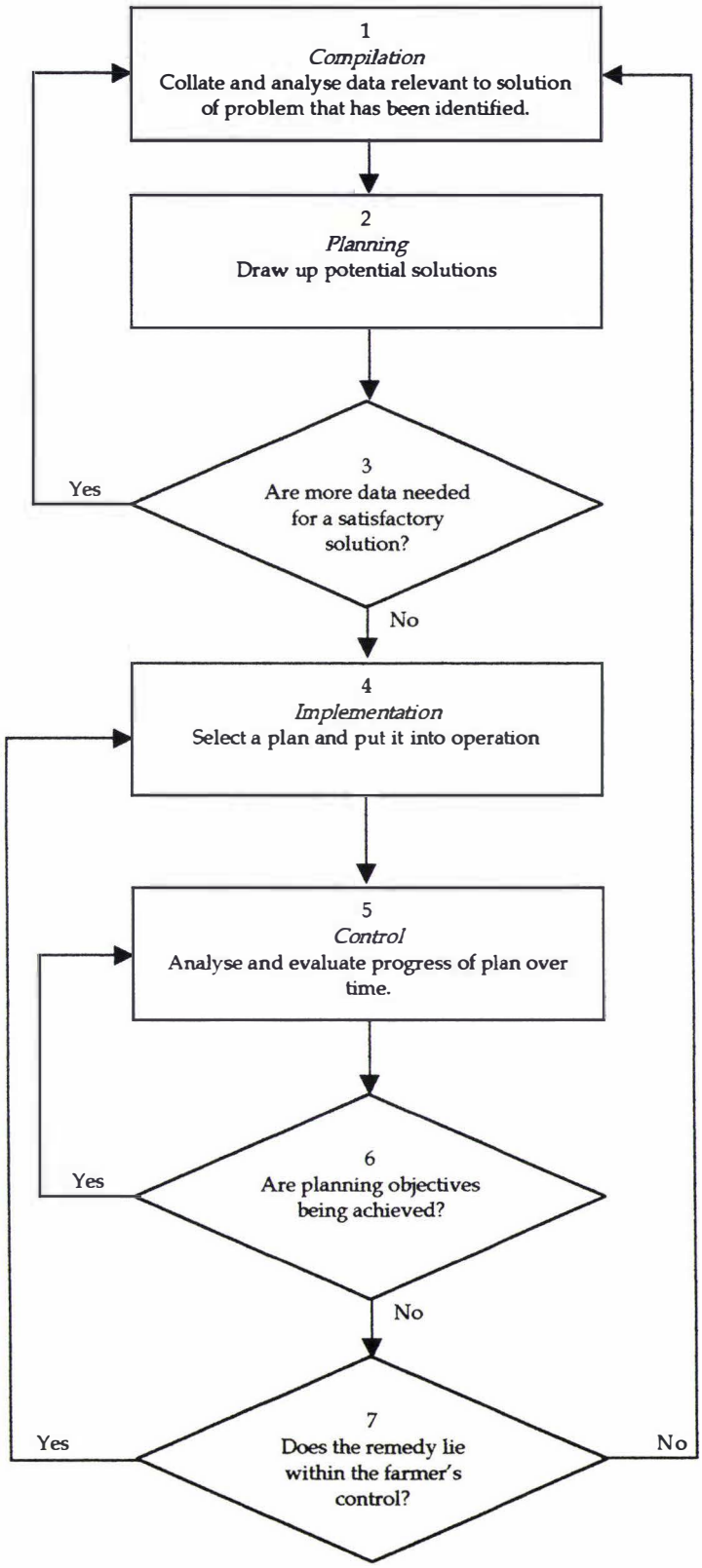

Figure 2 Stages in farm planning and control. (Source: Barnard and Nix, 1982).

However, Giles and Renborg (1990) suggest that the managerial role of the farmer is not dissimilar to that of managers of other businesses. "*In terms of managerial functions - setting objectives, planning, decision making, controlling etc. - they* [farmers] *will have much in common with other managers and much to learn from an understanding of management principles*" (Giles and Renborg, 1990) and they suggest that "*there is no such subject as farm management, only management applied to farms*". In fact, Figure 3 can be found in any management textbook.

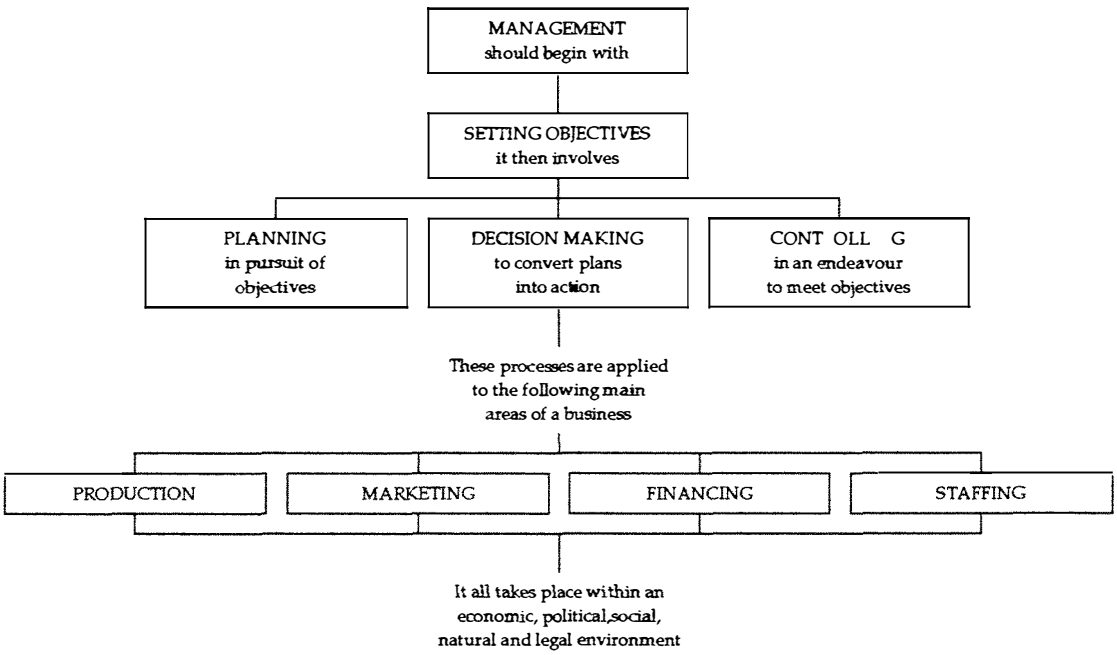

Figure 3 The Manager's Task. (Source: Giles and Renborg, 1990)

2.1.1.1 Planning

This is the first step in the management process. Planning is an ongoing process of developing the business mission, goals and detailed tactics to focus activities towards achieving the desired goals. Methods for achieving objectives are developed along with contingency plans (Robbins & Mukerji 1994). Planning is also done to reduce uncertainty through anticipating change. Planning should force thinking about the future and contingencies i.e. how will different events impact on the business and can actions be implemented to minimise or remove adverse effects or alternatively to maximise and capitalise on opportunities.

The development of a business plan therefore requires establishment of goals and objectives for the business, thus enabling focused and rational decision making to

take place relative to a defined purpose (Klar & Clancy 1990; Robbins & Mukerji 1994). Without active and continuous planning there can be no control of the business. The low level of planning that occurs in small businesses may explain their high failure rate. Klar and Clancy (1990) report a failure rate of 50-70% within the first five years of operation, while Robbins and Wallace (1992) report that 75% of all small businesses "go to the wall within their first year of existence". In farming, this is generally not the situation as a farming business is a fixed asset business compared to most non-farming businesses. Therefore, an owner-operator farmer has a large asset base, which can be depleted over a period of many years before problems are realised and action taken by either the owner or creditors.

2.1.1.2 Implementation

Implementation is concerned with the actioning of the business plan, and is often broken into two components: organising and leading (Robbins and Mukerji 1994). Therefore implementation is the step of putting the plans into action; strategic implementation would include activities such as the acquisition of land, labour, machinery and capital resources (Boehlje & Eidman 1984).

Organising: is the process whereby an internal framework is established for the business. The framework defines the roles and activities required of people so that the goals of the business may be met. This includes the important task of staff recruitment, matching jobs to employees, defining job responsibilities i.e. job descriptions, and establishing clear lines of authority and a decision making process (Robbins & Mukerji 1994). While many farms do not employ full time labour they do use family labour and employ casual labour and contractors, which still requires roles to be defined.

Leading: is concerned with staff motivation, training and delegation. Communication is a vital component to successful leadership whether the number of employees is one or many, including family members. Without good communication and mutual understanding plans will not work, irrespective of the quality and detail (Makeham and Malcolm, 1993). Makeham and Malcolm (1993) also comment that if good communication does not already exist in a family situation then it is often hard to achieve because of the complex and close interpersonal

relationships that exist. Conflict resolution is another important component of leadership. Conflict must be managed and controlled if a business is to operate effectively and efficiently.

Important to both organising and leading is networking and communication with buyers and sellers. Recognising that the business is a link within a wider supply chain is also of importance and must be recognised by the farm manager. However, the importance of developing such networks is often undervalued.

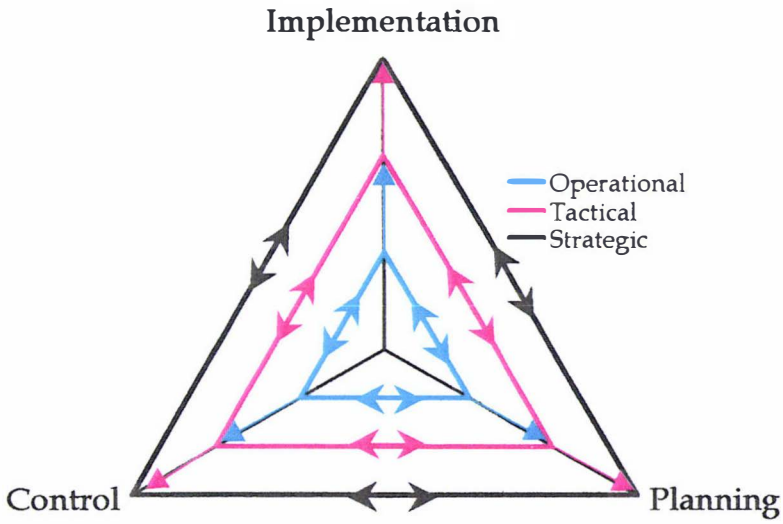

Figure 4 Relationship between the management functions.

Implementation requires motivation, skill and ability but also requires that planning and control systems exist at the same level that implementation is to take place. Implementation will be restricted to what an individual believes they can influence. This in turn determines what control systems can be utilised and reflects on the relevance of the initial plan.

Parker *et al.* (1994) refers to strategic decisions occurring only once or twice in a lifetime as they influence decisions such fixed asset acquisitions, the long-term deployment of resources and setting the overall farming policy. Tactical decisions occur more regularly as they involve modifying the strategic plan for variations occurring throughout the seasons over the years. Operational decisions are made in

the daily running of the farm business. So while tactical management is seen as an adjustment to the strategic plan the strategic plan will not be achieved unless the manager is able to implement and control plans at the operational level (Figure 4).

2.1.1.3 Control

This step in the management process involves measuring performance and correcting deviations from the plan so that goals are accomplished. Alternatively flaws in the plan may be identified and the control process then requires the plan to be modified. A good control system allows problems to be detected early in their development and the necessary corrections to be made to ensure that specified goals are attained (Boehlje & Eidman 1984).

Control is vital to the management process and without it, time spent on gathering and analysing data and on formulating plans may be largely wasted (Barnard and Nix, 1982). Kaine *et al.* (1994) interpret this further and say that "*...identifying the limits on the control that an organisation can expect over outcomes is a crucial step in the process of identifying objectives and formulating plans to achieve those objectives*".

Boehlje and Eidman (1984) claim that most control systems used by farmers are inadequate for control purposes because:

1. Measurement is generally done annually therefore it is too late to correct deviations and a whole production cycle has been lost.

2. Existing accounting procedures and record keeping methods are not timely and do not indicate causal factors or forces of deviations. In addition, between enterprise analysis is often difficult and inaccurate.

3. Actual correction of deviations e.g., 'goal modification', 'redraw plan' or 'improve implementation of existing plan' do not occur.

Control is discussed in more detail in Section 2.3.

2.1.2 Other views and issues of Management

The majority of management textbooks define three or four functions of management, depending on whether or not implementation is represented by organising and leading. Boehlje (1993), in relation to farm management, refers to the management matrix as a summary of the functions and fields involved in successful farm management. This is expanded further by Parker *et al* (1994) to take account of changes in the farming life cycle and is represented in Figure 5. Boehlje (1993) suggested that successful management requires performance in all of the function/field cells and that managers should assess both their ability and time availability in relation to each of those cells.

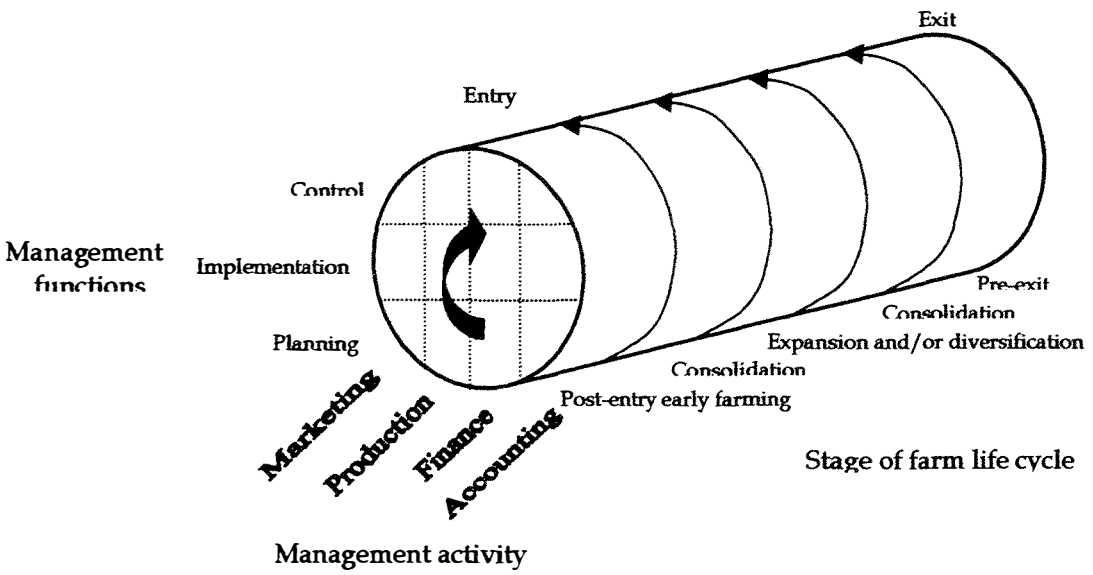

Figure 5 A graphical representation of the attributes of farm management. (Source: Parker *et al.*, 1994).

2.2 Planning

"...planning entails the idea that an individual or organisation can undertake certain actions which will alter the course of events in favour of these outcomes which are sought. For planning to be a sensible and meaningful activity to undertake this means that an individual or organisation must have an objective of some form and some capacity to 'influence' outcomes. The nature and type of planning that an organisation should undertake depends, in the first instance, on the capacity of the

organisation to 'influence' or control outcomes. [This] *is also a fundamental determinant of the nature and type of objectives that an organisation may reasonably set for itself'* (Kaine *et al.,* 1994).

2.2.1 Strategic planning

Strategic management is concerned with the overall management of the business, therefore strategic management is a process by which the organisation:

- Determines its vision, sense of purpose and values, and strategic intent;
- Establishes long-term and short-term performance objectives;
- Develops programmes and courses of action that will allow strategy to be acted on in a meaningful way;
- Implements strategy;
- Establishes styles of leadership and management and develops organisational structures and cultures that best support and promote strategies; and
- Continually evaluates performance, reviews the situation and initiates required corrective adjustments (CCH 1994).

Rea and Kerzner (1997) presented the key processes of strategic planning and clarify the products that evolve from each process as outlined in Figure 6.

PROCESS	PRODUCT
SWOT Analysis	Identifies critical issues or problems confronting the organisation.
Mission Statement	Clarifies the purpose of the organisation and whom it serves.
Vision Statement	Proclaims the desired state of affairs or what the organisation wants to become.
Strategies	States what the organisation will do to resolve critical issues/problems so that its vision will be fulfilled.
Performance Measures	Critical indices help the organisation monitor progress toward achieving its objectives.

Figure 6 Processes and Products of Strategic Planning. (Source: Rea and Kerzner, 1997) [1].

In Figure 7 the strategic planning process is represented by a number of steps, requiring a simple question to be answered before progress to the next step can occur. The clouds represent factors that influence the answers to those questions and therefore require careful consideration and research and analysis by the manager.

[1] SWOT analysis refers to strengths, weaknesses, opportunities and threats. Refer Section 2.2.4

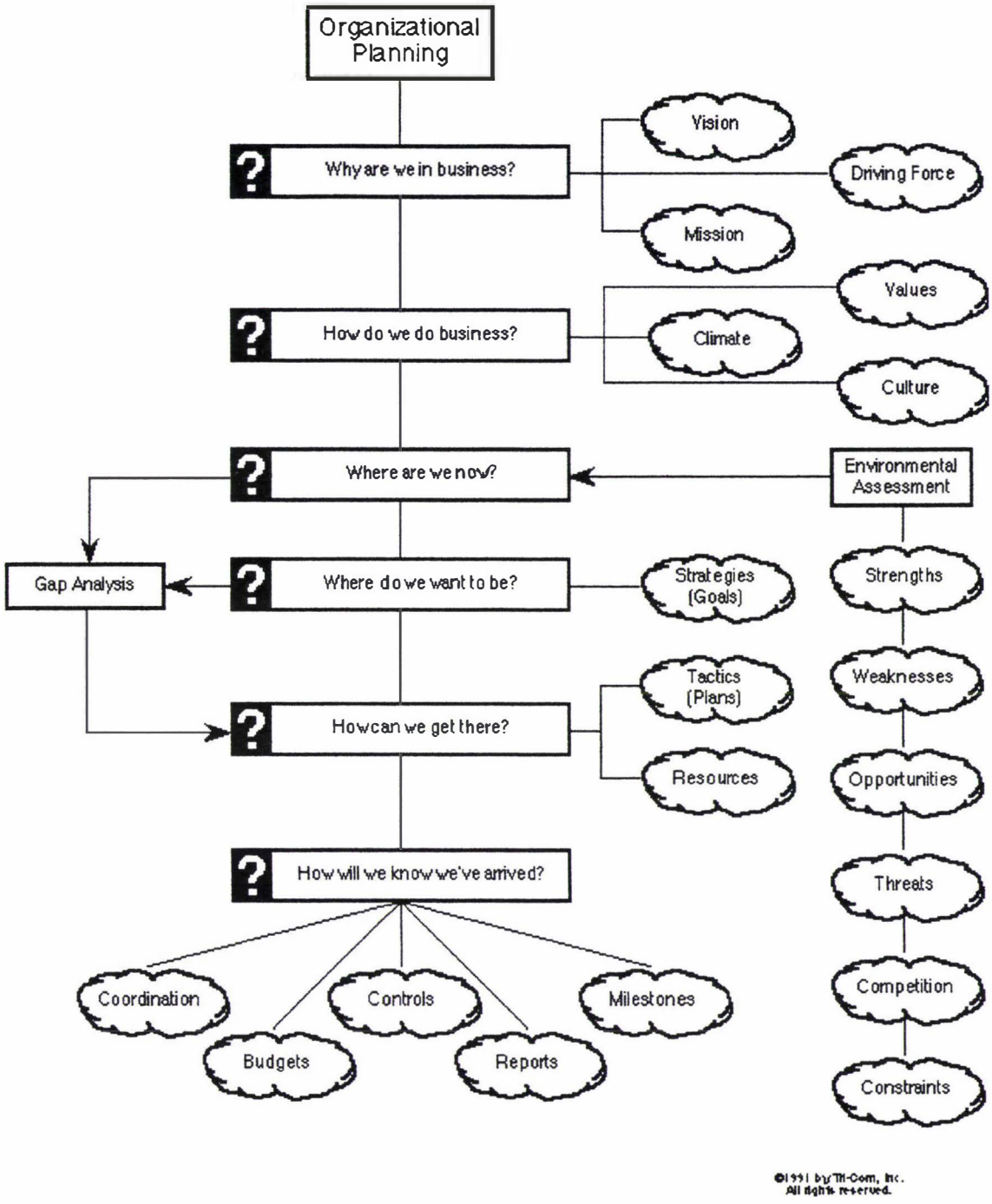

Figure 7 Strategic Planning Model. (Source: TM-Com. Inc., 1991).

Steiner (1997) completed a survey in the 1970's concerning the pitfalls of planning as experienced by large companies (33% of respondents had sales over US$1 billion) [2]. The top ten pitfalls to planning are identified in the table below. It is interesting to

note that many recently published management textbooks still refer to Steiner's questionnaire findings.

Table 2 The ten most common pitfalls to be avoided in planning (n=159). (Source: Steiner 1997).

Top management's assumption that it can delegate the planning function to a planner.
Top management becomes so engrossed in current problems that it spends insufficient time on long-range planning, and the process becomes discredited among other managers.
Failure to develop company goals suitable as a basis for formulating long-range plans.
Failure to assume the necessary involvement in the planning process of major line personnel.
Failing to use plans as standards for measuring managerial performance.
Failure to create a climate in the company which is congenial and not resistant to planning.
Assuming that corporate comprehensive planning is something separate from the entire management process.
Injecting so much formality into the system that it lacks flexibility, looseness, and simplicity, and restrains creativity.
Failure of top management to review with departmental and divisional heads the long-range plans, which they have developed.
Top management's consistently rejecting the formal planning mechanism by making intuitive decisions, which conflict with the formal plans.

Farmers tend to be very good tactical planners but tend to suffer from "hit the wall" syndrome before alternative plans are made (Boehlje, 1993). Strategic planning is thinking about the future in terms of multiple expectations, not just one, and identifying the business' sustainable competitive advantage. Information is critical to strategic planning and Boehlje (1993) claims that the person with the information has the power.

Strategic planning has the potential to offer farmers a valuable management tool through helping them understand and operate in an continually uncertain environment. Parker *et al.* (1997) suggest that strategic planning provides a suitable tool as it can be used to provide a buffer against environmental uncertainty while offering flexibility to respond to new opportunities and the capacity to generate satisfactory funds to support growth.

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[2] Steiner's book was first published in 1979.

However, Martin (1990) cautions that the formalised strategic planning process must be flexible enough so as not to stifle imagination, analytical ability and creativity which is required when planning in a rapidly changing environment. Successful farm managers have been identified as those who think more strategically than their less successful counterparts because of the enhanced clarity in their strategic decision making (Martin, pers. comm.)

2.2.1.1 The Balanced Scorecard

The balanced scorecard is a strategic planning tool. Currently, it is used widely throughout the corporate business sector. Its success as a strategic planning tool has been associated with its ability to give managers a fast yet comprehensive view of the business (Kaplan and Norton, 1992).

2.2.1.1.a History & Definition

Kaplan (1992) states that in the corporate sector traditional financial performance measures are not, by themselves, appropriate for contemporary management styles. Butler *et al.* (1997) reinforced this and suggested that systems incorporating a broader range of performance measures are better able to deliver long-term strategic objectives. Robert Kaplan and David Norton conceived the Balanced Scorecard concept in 1990 after a year-long research project with 12 companies at the leading edge of performance measurement (Kaplan 1992). These companies were observed to be responding to the change in focus of today's management styles from financial measures only to financial and operational performance and measures. Birchard (1995) suggests that numbers alone can no longer be used to run a business effectively, as they have no predictive power. However, an understanding of what causes the numbers to be what they are must also exist (Birchard 1996a).

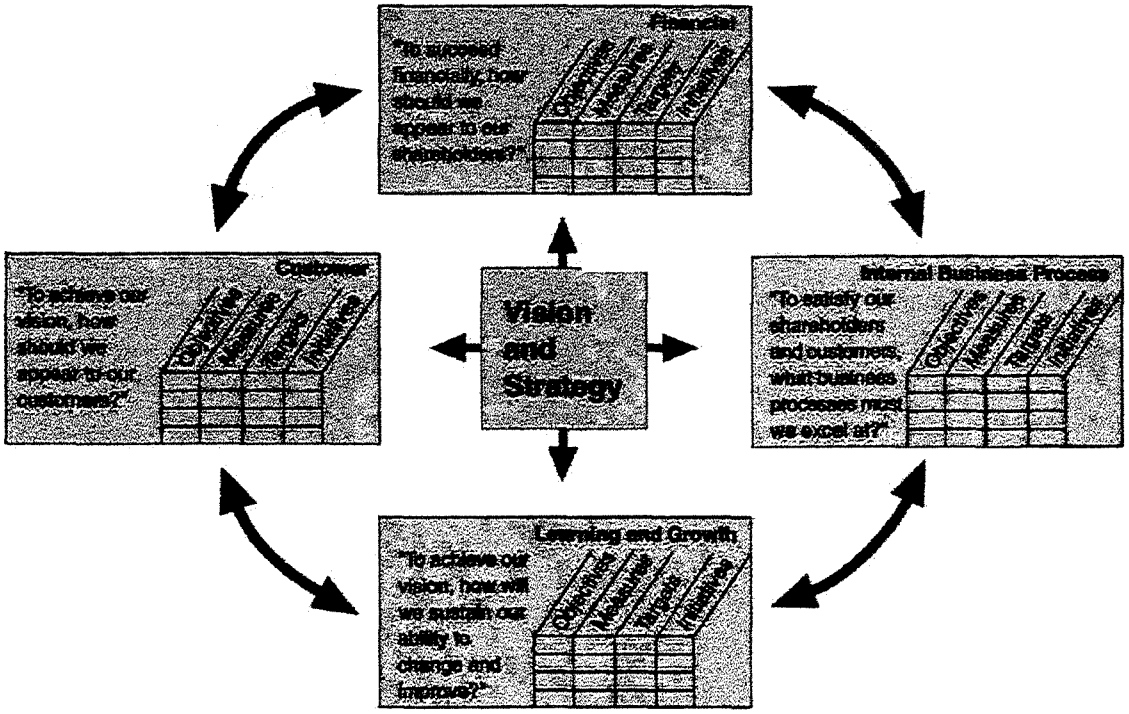

Figure 8 The Balanced Scorecard. (Source: Kaplan 1992).

A balanced scorecard is a set of financial and non-financial performance measures that reflect the factors that are considered to be critical to the success of the business. It gives managers important information from four different perspectives, which together offer a holistic view of the business's health. A balanced scorecard brings together on a single management report many of the disparate elements of the organization's competitive agenda. It also allows managers to consider all the important operational measures at the same time, letting them see whether improvement in one area is achieved at the expense of another (Kaplan 1992; Butler 1997). Kaplan and Norton (1992) likened the balanced scorecard to the cockpit controls of an aircraft. Their point being that a plane cannot be flown by relying on a single indicator dial - neither can a company in today's environment. Thus, the balanced scorecard allows managers to observe the business from four important perspectives while at the same time it minimises the information overload by limiting the number of measures used. "The balanced scorecard forces managers to focus on the handful of measures that are most critical" (Kaplan 1992). The four perspectives identified by Kaplan and Norton are listed in Table 3.

Table 3 The four perspectives of the balanced scorecard. (Source: Newing.1995).

Perspective	Question
Financial	How do we look to our shareholders?
Customer	How do customers see us?
Internal business	What must we excel at?
Innovation and Learning	Can we continue to improve and create value?

Financial perspective: this looks at the business from the viewpoint of the shareholder and therefore looks to see how the business' strategy is affecting the bottom line. Therefore, traditional measures such as growth, profitability and shareholder value are monitored.

Customer perspective: asks the question "How do existing and new customers view and value us?" (Kaplan 1992; Newing 1995). The answer to this question requires customer involvement, as they need to identify their expectations of the firm and how they measure the firm's ability to achieve their goals. Newing (1995) emphasised that for most organisations the price factor only represents 30% of their customers' total cost of acquiring materials or services. Therefore, businesses need to pay particular attention to identifying and understanding their customers' requirements. The development of quality assurance systems on-farm would be a strategy aimed at improving the supplier-customer relationship for the common good. Similarly the development of some contractual arrangements and strategic alliances also address this perspective by exploring how the farm can be developing and improving the relationship it has with its customer.

Internal business perspective: this focuses on the skills, competencies and technology of the business and its ability to meet the needs of the customer as well as the potential to add value to customers' businesses. Internal measures used in the scorecard should be based on those business processes that have the greatest impact on the ability to meet the customers' needs (Kaplan 1992). This area would generally be more than adequately covered in many farm business plans. It covers the ability of the business to deliver and produce to specification, thus concentrating on the production process (feed, cows, resources, staffing etc.).

Innovation and learning perspective: the focus of this section is the business' ability to change, improve and adapt their products and processes as well as the ability to develop and introduce new improved products and services (Kaplan 1992). The business must set targets that respond to continuous change in customer needs (Newing 1995). The importance of having goals in the farm business plan that fall into this area cannot be overemphasized. This is the area is characterised by non-financial goals. These goals should aim at ensuring the business' greatest assets, its people, are being developed and supported to deliver the innovation that is crucial to business success. This area does not always have the prominence it deserves in a number of farm business plans.

According to Kaplan and Norton (1993), the success of a business' balanced scorecard is its transparency. They suggest that "from the 15-20 scorecard measures, an observer should be able to see through to the business unit's competitive strategy".

2.2.1.1.b Formulation

Developing a balanced scorecard is not a quick and easy task. It requires a substantial amount of time and requires everyone in the business to understand the business strategy. In fact a balanced scorecard not linked to the business strategy is a waste of time as it is nothing more than a handful of measures that have little meaning to the business' success.

The first step in developing a balanced scorecard is to define the vision for the business. The vision needs to be detailed enough so that guidance can be obtained from it for all four perspectives of the scorecard (Kaplan and Norton 1993; Willyerd 1997). The gap between the vision and the actual situation must be translated into a strategy, which must then be communicated and understood by all individuals involved in its implementation. Butler *et al.* (1997) stressed that understanding and acceptance of the strategy, particularly by those devising the scorecard, is an essential condition for its success.

Following this is the identification of the critical factors that are required for successful implementation of the strategy, that is, what steps need to be taken to achieve the goals of the business. Issues that create growth i.e. investments, can be

focused on also; the balanced scorecard is not restricted to cost reduction and increased efficiencies (Kaplan and Norton, 1996c).

Identifying the relevant measures is the next step to the balanced scorecard development (Willyerd 1997). Having identified the critical success factors, measures must be established so they can be monitored. In their case study Butler *et al.* (1997) found that limiting measures to just 15-20, as specified by Kaplan and Norton (1992), was the most difficult part of the development process, followed by the fact that the identified measures showed only fuzzy linkages between strategy and objectives. The linkages identified by Butler *et al.* (1997) followed the sequence:

Strategy ⇨ Objectives ⇨ Measures ⇨ Targets.

The selected measures must have the following characteristics:

- ❖ What is measured is able to be controlled.
- ❖ They are easily quantifiable.
- ❖ Everyone in the customer's organisation can be involved in the measurement.
- ❖ They are measured as close to the frontline as possible.
- ❖ They are viewed as an improvement tool and not a punishment (Willyerd 1997).

2.2.1.2 The Balanced Scorecard and Farming

Farming in both New Zealand and Australia is based on family businesses. While the literature on balanced scorecards is focused on the corporate sector, it does not preclude its application to the family farming business. However to do this the elements of a family business, and how and why these differs from a corporate business, must be understood.

The balanced scorecard is a framework for integrating measures derived from strategy thereby offering the family business not only a measurement system but also a management system to be used in the following ways:

- Clarify and gain consensus about strategy
- Communicate strategy throughout the business
- Align business and personal goals to the strategy
- Link strategic objectives to long-term targets and annual budgets
- Identify and align strategic initiatives
- Perform periodic and systematic strategic reviews, and
- Obtain feedback to learn about and improve strategy (Kaplan & Norton 1996c).

The scorecard can help family businesses by aligning and focussing them on implementing long term strategy (Kaplan & Norton 1996c).

The family business mixes emotions and sentimentality with objectivity and rational calculation. The family and the business are inseparably linked despite the relative incompatibility of the two components. The family business, unlike a corporate, must deal with the demands of family relationships as well as the demands of the market place (Robbins & Wallace 1992).

Robbins and Wallace (1992) characterised the typical family business as having one or more of the following:

- An unclear business structure with no formal legal agreements.
- Poor definition of responsibility i.e. who does what, where, when and with whom?
- Lack of formal hierarchy for responsibility and authority; especially important when non-family labour is employed.
- An owner/manager "tends to do everything while staff do nothing" syndrome i.e. "No one can do it as well as I can".

- Failure and/or inability to plan business development.
- Inability to set specific business objectives, design and implement strategies and actions, and then periodically and systematically evaluate the situation.
- Poor succession planning.

2.2.2 Farmer Values and Impact on Decision Making

Values were defined by Gasson (1973) as:

> *"...a more permanent property of the individual, less liable to change with time and circumstances. A value is a conception of the desirable referring to any aspect of a situation, object or event that has a preferential implication of being good or bad, right or wrong. Values are felt to be justified by reason, moral or aesthetic judgements. ...Values are ends in themselves, pursued for their own sake. They serve as standards influencing the selection from among available modes, means and ends of action."* (p. 524)

All members of a social system have values, as they are cultural products of being part of that social system (Gasson 1973). Gasson (1973) presented a list of dominant values that are likely to be associated with the farming occupation. She created four major categories:

- *Instrumental values*: where farming is viewed as a means of obtaining income and security with pleasant working conditions.
- *Social values*: where farming is undertaken for the sake of interpersonal relationships in work.
- *Expressive values*: where farming is a means of self-expression or personal fulfillment.
- *Intrinsic values*: where farming is valued as an activity in its own right.

Table 4 lists Gasson's (1973) value statements sorted by their major categories. This value list represents the foundation for several articles, which reported on the values and goals of farmers (Cary & Holmes 1982; Fairweather & Keating 1994). Cary & Holmes (1982) also highlighted that while goals and values have distinct definitions (refer Section 2.2.5.1 for goal definition) in practice the "distinction between goals and values may be fuzzy".

Table 4 Dominant values associated with the farming occupation. (Source: Gasson 1973).

Instrumental	- Making maximum income - Making satisfactory income - Safeguarding income for the future - Expanding the business - Providing congenial working conditions – hours, security, surroundings
Social	- Gaining recognition, prestige as a farmer - Belonging to the farming community - Continuing the family tradition - Working with other members of the family - Maintaining good relations with workers
Expressive	- Feeling pride of ownership - Gaining self-respect for doing a worthwhile job - Exercising special abilities and aptitudes - Chance to be creative and original - Meeting a challenge, achieving an objective, personal growth
Intrinsic	- Enjoyment of work tasks - Preference for a healthy, outdoor, farming life - Purposeful activity, value in hard work - Independence – freedom from supervision and to organise time - Control in a variety of situations

Robbins and Wallace (1992) identified three factors that are intrinsic to a successful family business: rational business principles, family characteristics, and a clear understanding of the strengths and weaknesses inherent to such an operation. These are detailed in Table 5 and Table 6. "To succeed in business a family must have strong emotional bonds. They must have practical business skills and they must adopt effective and rational business structures and practices. But more than this

they must encourage the natural strengths of family life and reduce the effect of the natural weaknesses" (Robbins and Wallace 1992).

Table 5 Success factors for the family business. (Source: Robbins and Wallace, 1992).

Rational Business Principles	Family Characteristics
A legal partnership	Trust
Good leadership	Affection
Effective decision making skills	Loyalty
Strategic business planning	Respect
Clear lines of responsibility	Emotional security
A motivated workforce	Conflict resolution skills
Fair and consistent rules	
Good communication	
A willingness to change	

Table 6 Strengths and weaknesses of the family business. (Source: Robbins and Wallace, 1992).

Strengths	Weaknesses
Trust	Lack of trust
Loyalty	Rivalry
Motivation	Lack of ambition
Sacrifice	Nepotism
Communication	Lack of privacy
Conflict handling	Conflict
Continuity	Lack of talent

Olsson (1988) suggests that farmers with clear, well-established values follows a structured decision making process thereby providing them with the greatest opportunity to be successful, as depicted on the left side of Figure 9. These farmers are also characterised by being able to deal with internal and external disturbances. Conversely, farmers with only vague values, the right side of Figure 9, have not thought about how they want to run their business and do not have formulated goals and therefore tend to be lackadaisical in their decision-making.

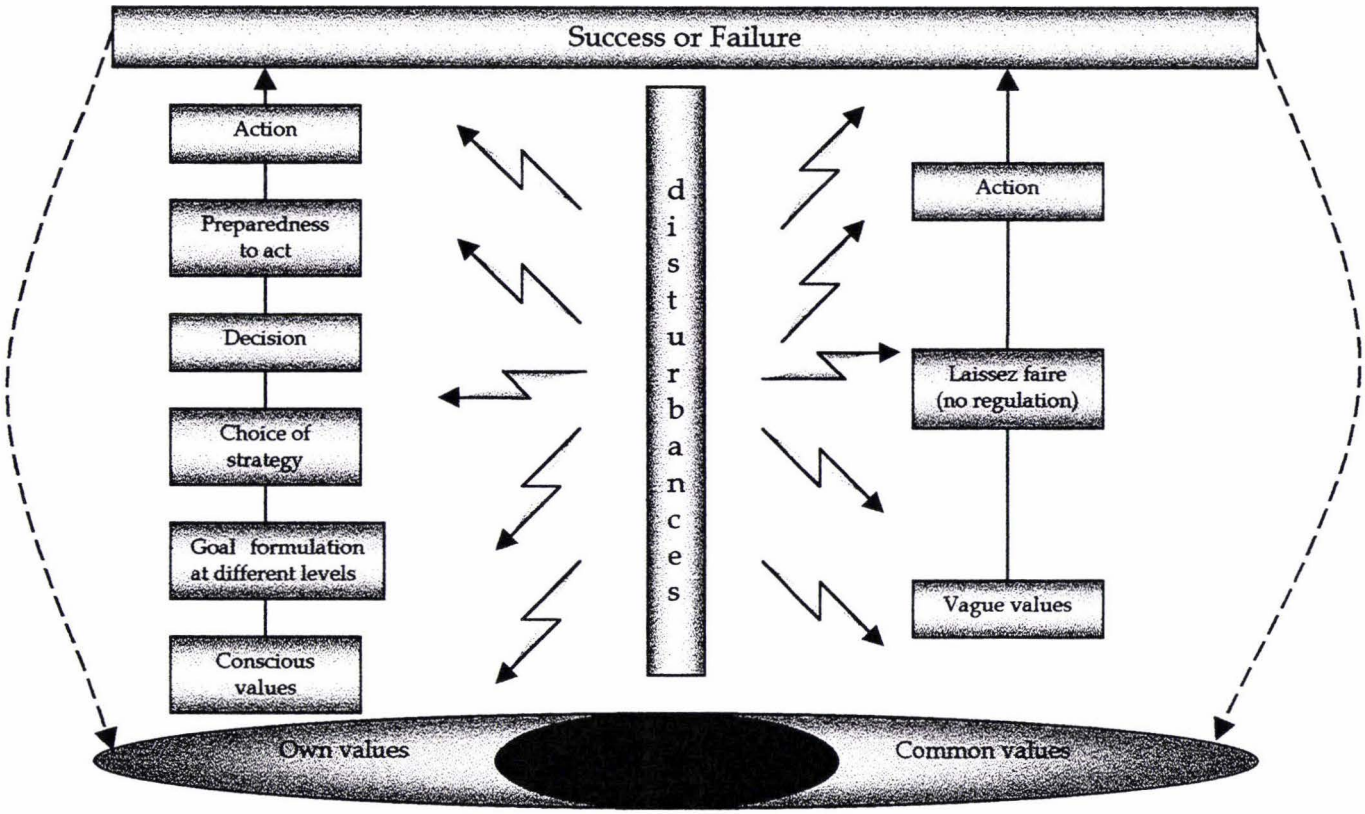

Figure 9 Conceptual Model: Relationship between values, goals and success. (Source: Olsson, 1988)

Identifying the values and goals of an individual farmer is essential if professionals working with farmers are to provide relevant and beneficial assistance to them. Olsson (1988) found that awareness on the part of the farmer/manager of their own goals was essential for them to be able to formulate goals. Therefore, it must be recognised that farmer behaviour and decision-making is intimately linked to his/her values.

2.2.3 Vision, Mission or Strategic Intent

"Vision without action is just a dream.

Action without vision is just an activity.

Vision and action together can change the world."

Joel Barker, President, Infinity Ltd.

The vision or mission statement is a proclamation of what a business aspires to be and to achieve, therefore it is an expression of the basic purposes of the business and the values and beliefs of senior managers and or owners (Steiner 1997). An effective vision must be desirable for the long-term interests of the stakeholders, feasible, focused enough to guide decision-making, flexible, and easy to communicate (Willyerd 1997).

Table 7 Contents of a good Mission Statement. (Source: Dobson & Starkey 1994).

The purpose of the business - a statement of the principal activities of a business or organisation.
Its principal business aims - its mission as regards the position it aims to achieve in its chosen business.
The key beliefs and values of the company.
Definitions of who are the major stakeholders in the business.
The guiding principles that define the code of conduct that tells employees how to behave.

The mission statement should be the "cornerstone" of every business, as it should provide direction and method of operation for the business (Steiner 1997). Parker *et al.* (1997) simply explain the purpose of a mission statement as expressing the answers to three questions:

1. Why are we involved in this type of business?
2. What do we want to achieve?
3. What values will we adopt to achieve our aims?

The mission statement must be understood by all in the business, as well as appealing and perceived as important so that all will give their personal commitment to it (CCH 1994). Therefore, an important role of mission statements is to ensure that members of the business do not waste time on strategies and plans that are inconsistent with its direction (Steiner 1997).

A carefully prepared mission statement can lead to success for a business, and if revised can also successfully turn a business around. Equally however, a poorly formulated mission can bring disaster to a company (Steiner 1997).

Dobson and Starkey (1994) referred to four approaches used by businesses in setting their missions.

1. *Targeting* - where a clear, definable target is set for the organisation to aim for.

2. *Focusing on a common enemy* - strategic choice is guided by defeating the "common enemy".

3. *Role modeling* - often used by smaller companies who model themselves on larger dominant players in their industry.

4. *Internal transformation* - used by older organisations needing a radical change. The starting point is recognising that the existing mission is "out of tune" with the new realities facing the company.

Businesses without mission statements, while claiming that they identify more opportunities because of their flexible approach, lack the ability to consistently focus resources and efforts. Lack of a mission statement also makes them vulnerable because they often lack the acute understanding of the competitive environment in which they operate, and there is no commitment to strategies for building a stronger position for themselves (CCH 1994).

2.2.4 SWOT Analysis

The SWOT analysis is a strategic audit, which determines where the business is currently positioned in a strategic sense. SWOT refers to the identification of the:

- Major internal Strengths
- Major internal Weaknesses
- Major external Opportunities
- Major external Threats

The fundamental goal of a SWOT analysis is to assess how well a business fits the environment: this is effectively also a gap analysis as the difference between the business and environment (the gap) must be closed to allow business success. The SWOT analysis highlights the individual areas where these discrepancies occur (Rea and Kerzner 1997).

Before a SWOT analysis can be undertaken information on both the business and industry/external environment must be collected. This information is obtainable in part through account analysis, discussions with colleagues and talking to industry representatives about their views on future directions for the industry and any influencing factors (Klar and Clancy 1990).

Dobson and Starkey (1994) identified some of the main opportunities and threats that may face a firm. Opportunities should be exploited, while threats must be overcome through realistic review and appraisal.

Table 8 Opportunities and threats faced by businesses. (Source: Dobson and Starkey 1994).

Opportunities	Threats
Market share	Market saturation
Experience	Changes in consumer tastes
Financial strengths	Demographic shifts
Technological leadership	Shortages in factor input supplies
Good products (e.g., trade names)	Economic uncertainty (inflation? Recession?)
Low cost	Government regulations (including European Community)
Economies of scale	Competitor's market power
Distribution system	Pressure groups (animal welfare?)
Skilled personnel	Political uncertainty (change in Govt.)
Favourable public image	Change in trade policy (breakdown of free trade agreements?)

Strengths and weaknesses of a business can be identified in areas such as:

- Markets: that is the share of business, size of customer base and customer loyalty, demand trends, location, and price structure.
- Operations: condition and age of plant and machinery, quality control, and production efficiency.
- Finance: cashflow, profitability, solvency, leverage, liquidity, and availability of finance.
- Staff: key personnel, staff skills, staff training, morale, and leadership (Klar and Clancy 1990).

For example a major consideration to be taken into account for dairy farm businesses is that they are a commodity business. Product differentiation is very difficult therefore, most agricultural businesses must focus on cost leadership. This then becomes their competitive advantage. Michael Porter (1980) discusses three generic strategies for outperforming other firms in an industry. These are overall cost leadership, differentiation and focus. Focus is where a business targets a particular buyer group, segment of a product line or geographic market. Differentiation is offering a product or a service that is perceived to be unique for example through either marketing, technology, features or customer service. For the dairy farmer focussing and differentiation are not available options if the sole business is the production of milk. Therefore the only generic strategy available to dairy farmers is cost leadership. Cost leadership is about having for example efficient scale facilities, vigorous pursuit of cost reductions, tight cost and overhead control.

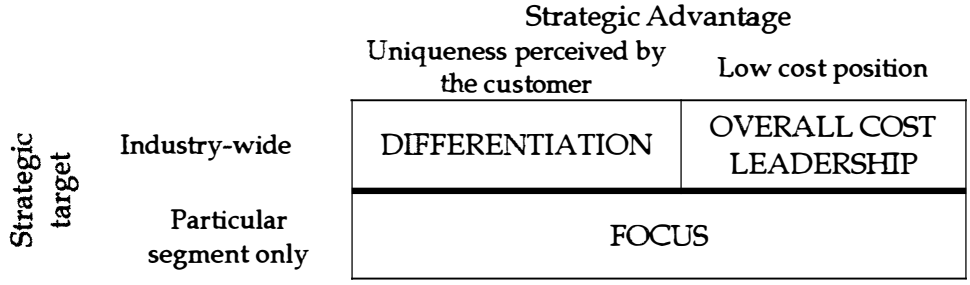

Figure 10 Three Generic Strategies. (Source: Porter, 1980).

An effective strategy is one that takes advantage of a business' opportunities by employing its strengths and lessens threats by avoiding, correcting and/or

compensating for weaknesses. This is represented in the WOTS-UP matrix, which is another representation of weaknesses, opportunities, threats and strengths.

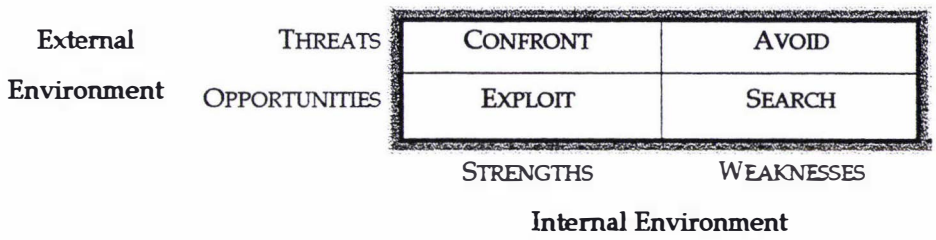

Figure 11 WOTS-UP matrix. (Source: Rowe *et al.*, 1990).

When preparing a strategy it is important to view the business objectively and recognise only genuine strengths and not to pass by weaknesses.

2.2.4.1 Definition and Identification of key performance indicators and standards

From the business and SWOT analysis, the components making up the gap between current and desired positions are identified and appropriate metrics or indicators can be selected and/or developed to measure progress in reducing the size of the gap. Because the time and cost required in measuring standards only a limited number of both financial and physical measures should be used (Boehlje & Eidman 1984). This means that what is measured needs to be prioritised in relation to the goals that have been identified from the business analysis (Boehlje & Eidman 1984; Camp 1995). To do this the key steps or processes that need to be taken should be clearly understood so that relevant measures can be identified and prioritised goals can be achieved (Camp 1995).

Boehlje and Eidman (1994) defined standards as being the criteria against which actual performance can be measured. They are derived from goals specified by the farmer and family. Standards must be specific and written down to ensure consistency in calculation, in addition to being realistic yet challenging, timely, represented in relevant units, and above all reliable. Input data must also be reliable, accurate and consistent.

Each strategic goal should have a group of measures that best represent the critical elements to achieving it (CSBS 1996a) and those measures must be dynamic, that is, if

they are no longer relevant they should be eliminated and new measures developed and adopted as required. When devising new measures three questions should be asked:

1. Given our strategy, what are the most important measures of performance?

2. How do these measures relate to one another?

3. What measurements truly predict long term success in our business? (Eccles 1991).

Relying on financial indicators alone is no longer acceptable as it gives managers a short-term view only (Eccles 1991). Financial measures should be set and viewed more like milestones to indicate how well central parts of the business' strategy are being achieved (CSBS 1996b). By doing this, long-term objectives are focused on. Therefore many of the new indicators that are being introduced to control systems are based around non-financial results. However, a clear link is still required between financials and non-financial results, so that improvement in one is not at the expense of the other (CSBS 1996c).

2.2.5 Goal Identification

"*Without clear, concise, and communicated goals, management is not possible. Without understood goals, decision making is merely a response to changing conditions. Without goals there can be no leadership, only confused managers directing even more confused employees.*" (Duncan, 1999).

Having identified the business' mission, or strategic intent, and where the business is currently positioned with respect to the external and internal environments, goals can now be identified as tasks that need to be done and strategies developed to achieve them. Therefore when working with a family business, where personal and business goals are intrinsically entwined, it is important that the internal analysis identifies all personal issues as gaps in these will provide the foundation for goals also.

2.2.5.1 Defining goals

> *"Goals are defined as ends or states in which the individual desires to be or things he wishes to accomplish."* (Gasson 1973, p.524).

In the literature, for example Duncan (1999), Rea and Kerzner (1997), Steiner (1997) and Dobson and Starkey (1994), goals are also referred to as strategies or strategic choices, ends or objectives.

2.2.5.2 Setting goals and strategies

Strategies (strategic choices or goals) should be developed so that they remove weaknesses and develop strengths, while pursuing opportunities and dealing with threats. All of these are identified in the business analysis, in particular the SWOT analysis (Klar & Clancy 1990; Dobson and Starkey 1994; Steiner 1997). Crucial to the process of goal identification is to have established what the manager feels that he/she can control and influence. If a goal has been identified but the manager believes that he/she is unable to control or influence it, then that goal becomes unattainable and therefore unrealistic (Wright, 1985). Alternatively, it might highlight knowledge and skill deficits thus presenting educational opportunities. The acquisition of new knowledge and skill will to assist the manager in understanding cause and effect linkages, which may influence previously identified goals (Figure 12).

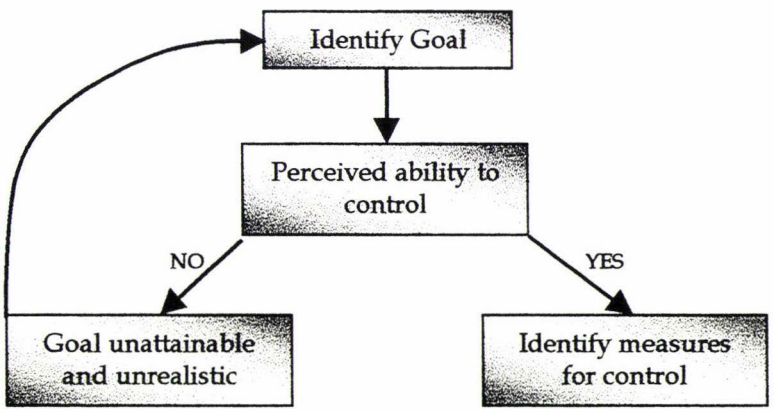

Figure 12 Goal Viability.

British psychologist C.A. Mace identified some important criteria about goal setting through his research during the 1930's. These findings have been confirmed by contemporary researchers (Duncan, 1999). The most important ones are listed in Table 9.

Table 9 C.A. Mace's key findings on goal setting. (Source: Duncan, 1999)

1. For goals to be effective motivators, individuals must know their level of performance and its variance from the expectation or goal.
2. Performance is influenced by ability as well as motivation. Goal setting must consider individual abilities. Impossible goals are rejected.
3. Goals must be accepted to be motivational.
4. Goal achievement should consider the quality as well as the quantity of work.
5. The development of task strategies is important to goal attainment.

Morriss's (1998, cited in Shadbolt, 1998d) conceptual management performance model (Figure 13) was developed on the basis of practical and theoretical farm management literature, as well as business and human resource literature and from interviews. The right hand side of Figure 13 confirms the importance of Mace's 1930's findings and highlights that the management process is very dependent on the direction and motivation of the manager.

The model provides a simple framework for professionals working with farmers to assist in understanding the components involved in the management behaviour of farmers.

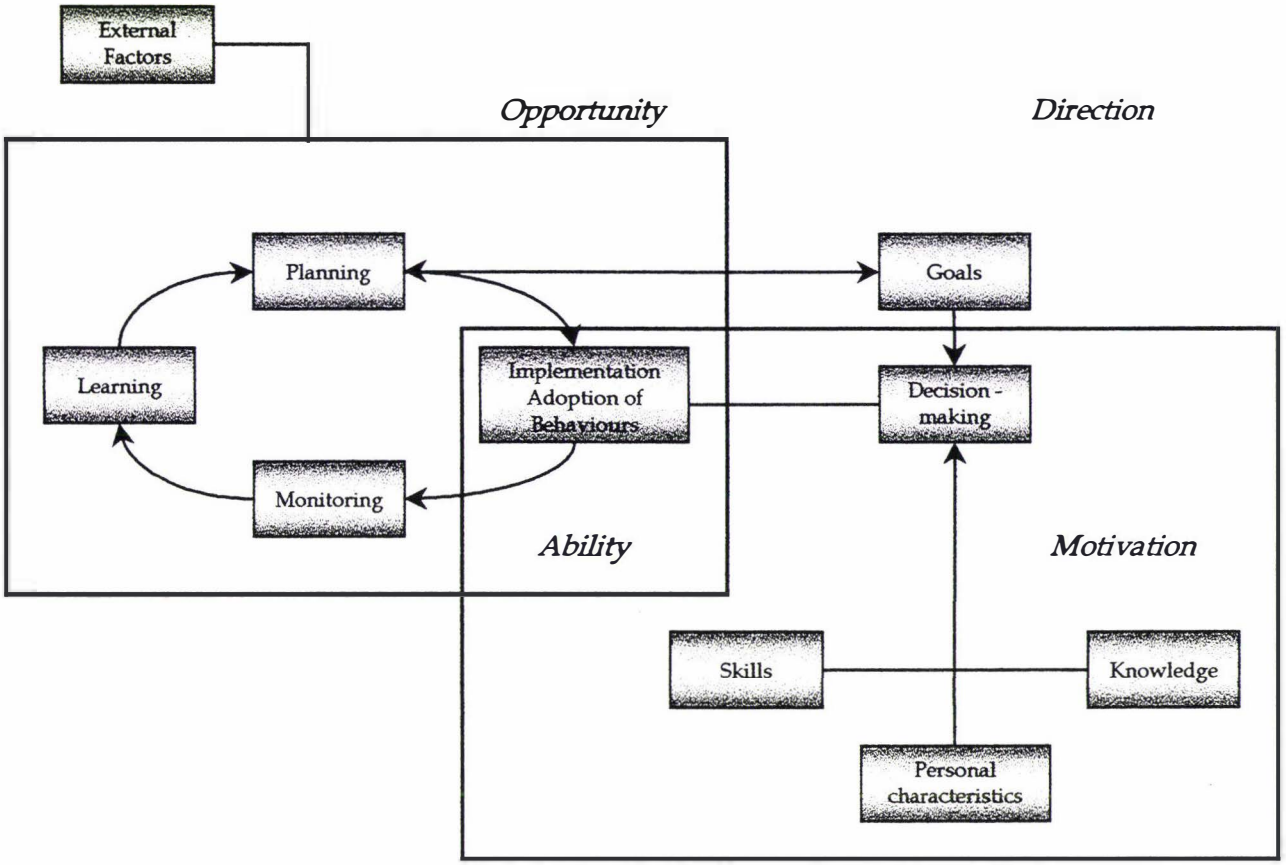

Figure 13 Conceptual Management Performance Model. (Source: Shadbolt, 1998d)

Strategies may involve major change and upheaval or they might just be small progressive steps in fine-tuning existing strategies. Before any strategy is adopted, it must be evaluated with reference to the following criteria:

- Sustainability: "strategic fit" in relation to the state of the internal and external environments i.e. from SWOT analysis.
- Feasibility: the strategy must be assessed on how it might work in practice.
- Acceptability: the potential risks and returns to all interested parties (shareholders, management, employees etc.) must be identified and acknowledged

2.3 Control

"*Control has long been considered...'to be one of the most neglected and least understood areas of management activity'. Its managerial role has often been mistakenly considered to be synonymous with financial control*" (Giglioni and Bedian (1974) cited in Berry *et al.*, 1998). Based on this misconception, control issues have been considered the responsibility of accountants and solely equated to techniques of budgeting and financial rations (Berry *et al*, 1998).

Koontz and Weihrich (1990) use the following analogy for control; "*...planning and control may be viewed as the blades of a pair of scissors; the scissors cannot work unless there are two blades. Without objectives and plans, control is not possible, because performance has to be compared against some established criteria*". Plans can be characterised as major attempts at control and forms a substantial event in the continuous process of control (Wright, 1985). Control and influence are used interchangeably by the lay person however for the manager there is a key distinction: "*...control is to do with the achievement of objectives whereas influence describes a power relationship. Control implies the existence of influence, but the reverse does no apply*" (Wright, 1985).

There are three steps to the basic control process (Figure 14). The first is the establishment of standards, second is measuring performance against them and the third is correcting deviations from either the standards or the plan (Koontz and Weihrich, 1990). However, Parker (1999) suggests that deviations will only be corrected once the variation exceeds a threshold value, "trigger" value or control range. For example in feed budgeting corrective action may not be taken until pasture levels are plus or minus 200kg DM/ha (Parker, 1999).

Koontz and Weihrich (1990) define standards as "criteria of performance...[that] are selected points in an entire planning programme". The points at which performance is measured provide signals to the manager about the progress being achieved, or not. While there are many kinds of standards Koontz and Weihrich (1990) suggested that the best standards are "verifiable goals or objectives". Standards may also be considered as milestones. The setting of standards should ensure that they are easily calculated, the information readily available and relevant to the goals. Ideally measuring performance should be done on a froward-looking basis so that

deviations can be predicted and or detected in advance and actions taken to minimise their impact or remove their occurrence (Koontz and Weihrich, 1990).

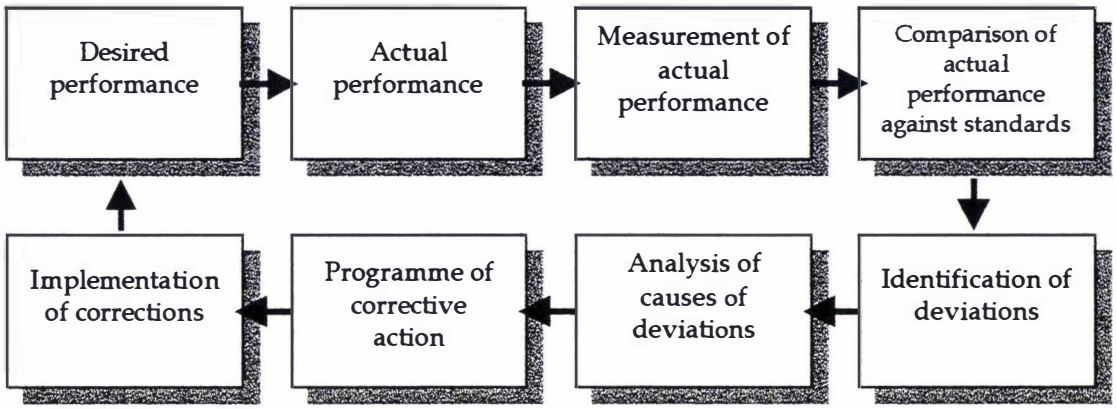

Figure 14 Feedback loop of management control. (Source: Koontz and Weihrich, 1990)

Kaine *et al* (1994) suggest that it is fundamental for an organisation to determine the its ability to influence or control outcomes. "*Determining the degree of control that an organisation can exert over performance outcomes is a matter of assessing the nature and extent of 'variety' in the operating environment and assessing the nature and extent of 'variety' the organisation can muster through its physical, financial and managerial resources*" (Kaine *et al.*, 1994). 'Variety' is defined by Wright (1985) as the number of distinguishable elements limiting control, "*for the achievement of total control over outcomes of interaction of any systems with its environment, the controller must have available variety in the system which is at least identical to the variety in the environment with which he is confronted*". If the controller has less variety than the environment then there will always be variation in the outcomes. Given that this is the situation that characterises the farmers' environment then it is expected that the farmer's plans will be broad and inexact and it could be argued that it is futile for the farmer to believe that there would be no variation performance (Wright, 1985).

2.3.1 Loci of control

The concept of loci of control relates to the perceptions of the individual with respect to elements within their operating environment that they believe they can control or

influence. Perceptions of control are influenced by differences in learning, experience and knowledge (Kaine *et al.*, 1994). Differences in perception obviously lead to differences in business/farming goals and the strategies that are developed in an attempt to achieve goal attainment (Kaine *et al.*, 1994). There are two recognised loci of control; an internal locus of control and an external locus of control. An internal locus of control is said to exist when an individual believes that their actions and behaviour determine the outcome of an event. That is there is a perception that a causal relationship exists between their actions and behaviour and the event and event result is a reflection of personal success or failure (Kaine *et al.*, 1994). The external locus of control represents the reverse of the internal locus in that the individual perceives that forces outside of their control determine the outcome of an event. Since these individuals believe that they cannot alter the event outcome through exercising their skills or knowledge, the event is not associated with personal success or failure (Kaine *et al.*, 1994).

Initially the locus of control concept was considered to be a personality trait however substantial literature has been written to suggest that the locus of control can be used as a predictor of behaviour. Kaine *et al.* (1994) reports that recent work shows that locus of control plays an important role in predicting environmental behaviour and that the locus of control influences the way farmers rank objectives.

2.3.2 Types of control

There are three types of control available to the manager, historical, real-time and predictive or feed-forward control. Historical control occurs when there is a time-lag between an event and the outcome and the only source of control is output data for example, accounting reports and calving spread. This type of information does not provide managers with a system that is able to provide guidance for corrective action (Koontz and Weihrich, 1990). "Feedback of output of a system is not good enough for control. This kind of feedback is not much more than a postmortem, and no one has found a way to change the past" (Koontz and Weihrich, 1990).

Real-time control is receiving information as it is happening supposedly allowing the manager to react immediately. However, Koontz and Weihrich (1990) argue that, based on the control feedback loop (Figure 14), it is not possible to have real-time

control as analysing the cause of deviations and developing a programme to rectify the problem is likely to be time consuming.

Predictive or feed-forward control occurs when control is directed towards the future, thus maximising potential effectiveness by providing the manger with the relevant information and the time to take corrective action (Koontz and Weihrich, 1990).

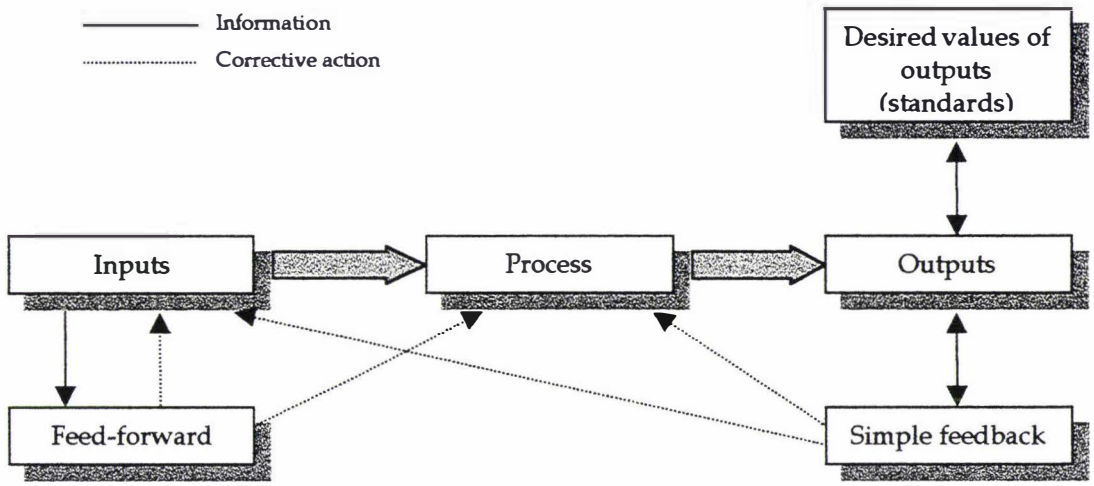

Figure 15 Comparison of simple feedback and feed-forward systems. (Source Koontz and Weihrich, 1990)

Whereas standard feedback measures process outputs feed forward systems, in contrast, monitor inputs into the process to determine whether the inputs are as planned (Figure 15). If this is found not to be the case then the inputs, or even the process, are changed to ensure that the desired output is achieved (Koontz and Weihrich, 1990). An example of feed-forward control for dairy farmers is the amount of milk in the vat after each milking. The farmer receives output data at each milking and is able to take action that will effect the following milking. For example if milk yield is less than expected then the farmer is able to make an immediate decision on feeding levels for the next grazing period, whether that be a larger allocation of pasture area or addition of supplements.

Koontz and Weihrich (1990) suggest that the following requirements are needed for a feed-forward control system:

1. Identify the most important input variables based on analysing the planning and control systems.

2. Develop a model of the system.

3. Keep the model up to date through regular reviews, looking for changes in interrelationships representing the system.

4. Collect data on input data variables regularly and put them into the system.

5. Assess the variations of actual input data from that planned and evaluate the impact they may have on expected results.

6. Act. The system identifies problems; people must take the necessary actions to correct them.

2.3.3 Methods of control

2.3.3.1 Performance indicators

Physical production indicators are the most commonly used control tool used by farmers and when combined with financial indicators can create a more holistic view of farm business performance (MAFF 1980). Physical indicators are often able to allude to, if not provide, causal information about a particular result or set of results. Some of these indicators are discussed in Section 2.4.

Financial indicators are the traditional and most common control tools used by business. They refer to the monetary level of the measured item. Barry *et al.* (1995) regard these absolute measures as having limited generality and that their primary use should be for the evaluation and monitoring of an individual business over time.

Boehlje (1994) viewed financial indicators as having a two-part role: to evaluate the overall financial performance of a business and; to evaluate the performance of financial management itself.

Financial indicators are broken down into a number of sub-headings. In this research the categories were based on the eight categories described by Boehlje

(1994): solvency, debt servicing capacity, profitability, revenue generation and cost control, savings behaviour, capital efficiency, labour efficiency and cost composition.

However, some important considerations must be taken into account when using financial indicators. Financial indicators are traditionally lagging indicators, and in the case of farming, they generally provide information based on a 12-month period. Financial indicators do not provide causal information as to why a particular outcome occurred, nor how strategy implementation is progressing (Kaplan and Norton 1996c). Eccles (1991) suggested that it is far more important that a business knows how it is performing compared to its competitors, and not with its own past. A focus on financial indicators alone is short-term and can lead to detrimental outcomes (Eccles 1991; Kaplan and Norton 1996c).

2.3.3.2 The budget: physical & financial

The budget is an approach to assembling and analysing information about the farm business and selecting alternatives based on that information. The budget represents the "dollarising" of plans (Koontz and Weihrich, 1990). There are two types of financial budgets used in farming, the cash flow budget and the capital expenditure budget. The cash flow budget is the most commonly used by farmers. The cash flow budget is essential for managing the liquidity of the business throughout the year and for formulating a financial plan so that seasonal deficits and surpluses can be dealt with (Barry *et al.* 1985). Actual financial performance is then compared to the budget so that the financial plan can be monitored and controlled. The cash book should match the cash flow budget at the end of the monitoring period. The completed cash book can then be used to form the basis of the following seasons cash flow budget (Parker, 1997).

The capital budget is specifically used as a planning tool for capital expenditure to compare different investment options. Once a decision has been made concerning the alternative to adopt, the capital budget then becomes the monitoring tool. In both types of budgets the information used is based on estimations of the external and internal environments and as such it is standard policy to round all figures to the nearest dollar, ten dollar or hundred dollar unit, depending on the size of the business (Parker, 1997).

The most common physical budgets in New Zealand are feed budgets and stock reconciliations. Feed budgets compare expected pasture growth rates for a time period with feed requirements for the livestock classes running on the farm. Any changes to the livestock system such as increasing stocking rate, changing lambing or calving dates, or changes in the livestock classes, can be plotted against expected growth rates and strategies can be put in place to meet feed deficits and utilise surpluses. Feed budgets can be prepared for a whole season or shorter periods to endure that the feed requirements are met and all available feed is utilised. The typical periods requiring intense feed budgeting on a dairy farm are autumn, winter and spring (Holmes and Wilson, 1987).

Feed and cash flow budgets are important tools in effectively managing a pastoral system, and they should be closely linked. For example, expected feed deficits may require the purchase of supplements which then becomes a cash cost that must be incorporated in the cash flow budget. If cash flow and feed budgets are not developed as part of the planning process then their control is not possible. Poor liquidity and underfed livestock, resulting from inadequate or non-existent planning and control are likely to lead to an unsuccessful business.

However, while budgeting is recognised as a fundamental tool for farmers, they do undertake other control processes. For example the monitoring of young stock growth rates is able to be monitored and controlled as target liveweights at key times have been identified as being needed to ensure that the performance of new heifers into the herd is not compromised. Animal health status of the hers is another process that is closely monitored and controlled as illness (mastitis, sore feet, retained foetal membranes) can affect the productive and reproductive performance of the herd. The genetic potential of the herd is monitored and controlled through sire selection programmes while the activities such as heat detection can identify potential fertility problems that may lead to an unsuccessful breeding season. Therefore, while work conducted by Gasson (1990) and Sealy and Warren (1994) suggests that the actual of financial control is quite low on farm there is a substantial amount of non-financial monitoring and control taking place (also refer to Section 2.4).

2.3.3.3 The comparative analysis

Two forms of comparative analysis are recognised. The first is when two or more years of financial and production data from an individual business is compared: this is also referred to as trend analysis (Kay & Edwards 1994; Barry *et al.* 1995). The only objective of this form of comparative analysis is to improve measures based on past results. However, in doing so there needs to be consideration and accountability for year-to-year changes due to climatic conditions and product prices (Kay & Edwards 1994).

Comparison between similar businesses is already common practice among dairy farmers e.g., LIC discussion groups and profit watch groups and private consultants. The advantage of this type of analysis is that it provides the farmer with an annual record summary and allows them to see what other similar businesses i.e. size, type, and geographical region, are doing (Kay & Edwards 1994). However, a major limitation with this type of analysis is that it is subject to overwhelming the farmer with a multitude of figures and ratios, as there is no specificity to the individual's own values and goals. As previously discussed, ratios and figures must be specific to the business' goals. A scatter approach to comparative analysis creates only confusion and possibly inappropriate signals to individuals.

Comparisons are often made to the average of the collected data and often against the average of the top ten percent of farmers. Candler and Sargent (1962) strongly argued that selecting a group such as the top ten percent is a purely arbitrary measure because the criteria of success and how it was achieved are not investigated. Shadbolt (pers. comm.) found this to be the case when given the task of deciding the best farm business from financial indicators alone as there was no criteria upon which they were to be judged. The greatest limitation of comparative farm analysis is that each farming business is unique by virtue of the resources available both in quantity and quality and on every farm. It is this factor combined with the managerial potential and objectives of the farming family and their staff that creates their uniqueness (Barnard and Nix, 1982).

Businesses that have well-structured plans and goals and have identified their strategies and their relevant measures are equipped to begin the identifying best practice techniques through benchmarking.

2.3.4 Benchmarking

"*Benchmarking is a systematic and continuous measurement process; a process of continuously measuring and comparing an organisation's business processes against business process leaders anywhere in the world to gain information which will help the organisation take action to improve its performance*" (Watson, 1993).

2.3.4.1 Definitions

The term benchmarking was previously associated with surveying and referred to a permanently marked object and point of reference for assessing land geometry (Pulat, 1994).

The process of modern day benchmarking was formally developed by the Xerox Corporation in 1979 (Pulat, 1994; Rao *et al*, 1996). Xerox redefined benchmarking as "*the process of measuring our products, services and business practices against the toughest competitors or those companies recognised as industry or world leaders*"

Other definitions of benchmarking include:

> "*Benchmarking is the process of comparing and measuring an organisation's operations or its internal processes against those of a best-in-class performer from inside or outside industry*" (Goetsch and Davis, 1997, p. 434).
>
> "*Benchmarking is the search for industry best practices that lead to superior performance*" (Camp, 1989, p. 12)
>
> "*Benchmarking is the practice of being humble enough to admit that someone else is better at something, and being wise enough to learn how to match and even surpass them at it*" (APQC, 1993)

Therefore benchmarking is the sharing of information between organisations or businesses to enable them to learn from adopt and adapt the secrets of that firm's success as a whole or within certain departments or functions. The main objective of benchmarking is process improvement.

Benchmarking focuses on excellence or "best practice" and involves detailed comparisons of processes, with that information being shared openly between participants but not going outside of the participant group. Benchmarking also involves all levels of staff within a business and most importantly, it is a continuous process.

Benchmarking should be viewed as a positive, proactive process to effect change in a 'structured' manner so that superior performance is achieved. It is an indicator of what a business' performance should or could be. Benchmarking "forces" those in the business to learn about and analyse their external environment and to investigate industry best practice so that those techniques can be incorporated into their business (Camp 1989).

Camp (1989) defined four 'philosophical' steps of benchmarking:

1. *Know your operation:* a knowledge of a business' strengths and weaknesses is essential.

2. *Know the industry leaders or competitors:* some of this information comes from the external environment analysis, however it also requires knowledge of competitors' strengths and weaknesses. It is the manager's role and goal to identify those businesses exhibiting superior performance, irrespective of their industry.

3. *Incorporate the best:* learn from industry leaders and competitors. Identify how and why they developed their strengths, then copy or modify them for your business.

4. *Gain superiority:* if best practice methods have been identified and investigated and the appropriate ones installed and implemented, then strengths will have been capitalised on and weaknesses reduced to match those of the market place. This should help place the business in a position of superiority.

These four steps highlight the importance of a thorough business analysis and planning programme. Alternatively benchmarking can be viewed as a goal setting process because it offers a method by which the practices needed to achieve existing and new goals can be identified and understood (Camp 1989).

2.3.4.1.a Benchmarking Classifications

A number of different benchmarking classification systems exist; two are looked at here. Bogan and English (Study Guide, 1998) designed a three-category classification as followed.

1. Process benchmarking where the focus is on discrete work processes and operating systems.

2. Performance benchmarking where competitive assessment is undertaken through product and service comparisons e.g., prices, technical quality and reliability, and

3. Strategic benchmarking examines how companies compete. Information collection occurs across industries with the focus being to identify winning strategies.

The more common classification for benchmarking (CIPFA, 1996; Study Guide, 1998) however is:

1. Internal benchmarking which is a comparison of internal processes. It aims to spread good practices throughout the business. It is a relatively simple process to set up and is considered to be less threatening to staff as a first experience of benchmarking.

2. Competitive benchmarking is a comparison of processes and performance between competitors. This generally requires a high level of trust between the benchmarking partners as confidential information is often disclosed.

3. Functional benchmarking compares processes or operations with non-competitor companies in the same industry or

technological area. Exposure to the operations of non-related companies can often provide radical ideas for improvement. The final classification is

4. Generic benchmarking compares a business' operations against the best operations around, irrespective of industry. Generic benchmarking can be used a diagnostic tool to identify an area that requires improvement which can then lead to benchmarking.

2.3.4.1.b Why Benchmark?

A benchmark study should provide, if undertaken properly, standards for comparisons through measuring performance excellence in other companies and the processes that enable enhanced performance (Watson 1993). The benefits (Camp 1989) available to businesses that undertake benchmarking are summarised in Table 10.

Table 10 Key reasons for benchmaraking and contrasting results. (Source: Camp 1989).

WITHOUT BENCHMARKING	WITH BENCHMARKING
Defining Customer requirements	
Based on history or gut feel	Market reality
Perception	Objective evaluation
Low fit	High conformance
Establishing effective goals and objectives	
Lacking external focus	Credible, unarguable
Reactive	Proactive
Lagging industry	Industry leading
Developing true measures of productivity	
Pursuing per projects	Solving real problems
Strengths and weaknesses not understood	Understanding outputs
Route of least resistance	Based on best industry practices
Becoming Competitive	
Internally focused	Concrete understanding of competition

WITHOUT BENCHMARKING	WITH BENCHMARKING
Evolutionary change	New ideas of proven practices and technology
Low commitment	High commitment
Industry best practices	
Not invented here	Proactive search for change
Few solutions	Many options
Average of industry progress	Business practice breakthrough
Frantic catch-up activity	Superior performance

2.3.4.1.c The Benchmarking Process

As previously mentioned benchmarking is a continuous process. The four key components to benchmarking are illustrated in Figure 16.

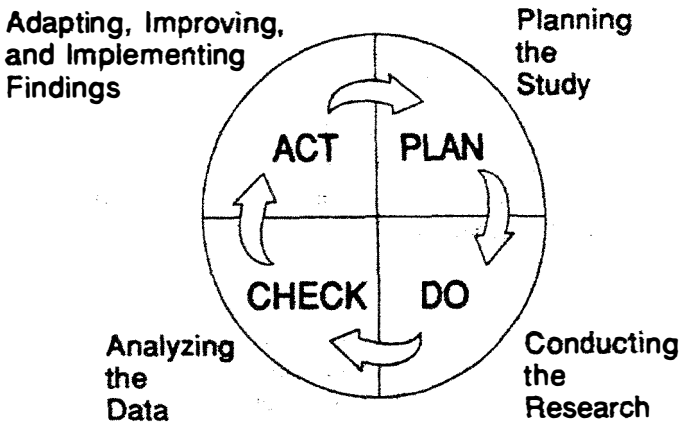

Figure 16 The Benchmarking Process. (Source: Pulat 1994; Watson 1993).

Step 1 is the planning stage, which involves identifying and defining those processes that require improvement and the relevant resources to study i.e. identify the people involved with the process. This can be largely achieved by answering two fundamental questions:

1. What should we benchmark?

2. Whom should we benchmark? (Watson 1993).

Step 2 is the process of researching and learning about potential target companies. It is very important to ensure that this step is completed thoroughly before contact is

made with these companies (Watson 1993). When the research stage has been successfully completed, contact may be made with target companies through a range of techniques i.e. interviews, site visits, surveys or questionnaires.

Step 3 is concerned with analysing the data collected so that findings and recommendations can be developed. Watson (1993) refers to two stages in this process; the first is concerned with determining the magnitude of the performance gap based on the benchmarking measures identified in the planning stage. The second stage of the analysis is identifying what process 'enablers'[3] exist in the leading companies that promote performance improvements.

Stage 4 is a process of adaptation, improvement and implementation of the relevant benchmarking processes identified. This step is the crux of the benchmarking process as it a tool for improved performance through organisational change (Watson, 1993).

2.3.4.2 Review of Existing Primary Industry Benchmarks

In reviewing these primary industry benchmarks, the aim of all parties is to provide a range of measures signifying greater profitability and business viability and sustainability. However, only one set of indices actually provides a measure that relates to this issue. The Ohio State University extension programme (Polson *et al,* 1997), "Dairy Excel", includes a measure representing both viability and sustainability (maintaining family's standard of living). This measure uses herd expansion as a form of growth and has been calculated based on the level of expansion required by an average farm business to remain viable and sustainable. The FAST (Farming and Sustainable Technology) project refers to capital creation frequently but does not actually measure it in any way and in the Dairy Research and Development Corporation (DRDC) ratios (Cummings, 1999), growth is not mentioned.

[3] Enablers are the "key to improving the target company's performance, and their discovery is the real goal of the benchmarking study" (Watson 1993).

2.3.4.2.a FAST Systems Economic Analysis Project

The ideas for the FAST project came out of farmer concerns for the economic sustainability of their grain farms. Farmer who had developed more intensive, higher input cropping systems wanted to know if these systems had long-term viability. The aims of the project were to:

Table 11 Fast 500 project aims.

Undertake a comparative analysis of grain farm businesses in Victoria, New South Wales, South Australia and Western Australia.
Identify the key factors affecting different performance
Identify best practices
Identify "key indicators" to measure performance
Establish benchmarks for the key indicators to generate reference points
Examine the impacts of different farming systems and enterprise mixes
Determine financial viability of each business and of the industry in general

The level of "disposable income per family"(DI/F) was selected as the focus for long-term viability as it is from this sum that lifestyle and asset creation are funded. One flaw with this calculation is that DI/F is a pre-tax figure and therefore a misleading term as it implies that tax is a discretionary payment. An allowance for taxation must be made, simply to remind farmers that it must be budgeted for in the cash flow. The project has created a list of 50 indicators (Table 12) looking at the areas of:

- Production - physical productivity, financial productivity, input productivity, labour productivity
- Capital - farm assets, debt, machinery.
- Viability - disposable income, equity, tax.
- Farm physical resource sustainability - water use efficiency, nutrient audit, herbicides, diseases, and soil health.
- People sustainability - income per labour unit, disposable income per family.

Table 12 FAST Indicators. (Source: Rendell *et al.*, 1995).

INDICATORS		Median	Range	
			High	Low
A PHYSICAL DESCRIPTION				
1	Number of households	1.5	2.8	1.0
2	Labour Units	3	4	1
3	Area - Owned and Leased (ha)	1,148	2,741	608
4	- Sharefarmed (ha)	0	139	0
5	- Total Effective (ha)	1,165	2,752	661
6	System - Crop Intensity	54	78	24
7	- Fallowing (% of crop)	15	51	1
8	- Min. Tillage (% of crop)	21	71	1
9	Soil - Self Mulching (Wimmera only) (%)	0	61	0
B PRODUCTION SYSTEM				
10	Livestock - Carrying capacity (DSE/Past. ha.)	4.2	8.4	1.9
11	- Income ($/Past. ha.)	93	170	35
12	Financials - Income per business ($)	225,673	533,243	117,296
13	- Income per family ($/family)	153,532	291,820	83,959
14	- Income per effective hectare ($/ha)	190	291	122
15	- Operating Costs per business ($)	126,638	271,366	65,798
16	- Operating Costs per family ($/family)	79,787	171,578	45,741
17	- Operating Costs per effective hectare ($/ha)	110	147	67
18	- Operating Surplus per business ($)	94,937	269,746	42,617
19	- Operating Surplus per family ($/family)	69,289	134,134	32,064
20	- Operating Surplus per effective hectare ($/ha)	84	159	44
21	- Operating Surplus per hectare / Whole Farm Land Value per hectare (%)	11	19	6
22	- Operating Costs / Income (%)	55	69	43
23	Inputs - Sprays/Crop hectare ($/ha)	32	65	19
24	- Fuel/Crop hectare ($/ha)	24	85	15
25	- Machinery Repairs/Farm Income (%)	5	9	3
26	Labour - Farm Income per Labour Unit ($)	94,175	177,223	53,805
27	- Machinery Value per Labour Unit ($)	99,282	172,303	44,873
28	- Land Value per Labour Unit ($)	378,764	681,270	221,110
29	- DSE per Labour Unit per % pasture ($)	2,298	4,816	847
30	- Effective hectares per Labour Unit (ha)	562	979	278
31	- Age of Manager (approx. years)	45	57	34

INDICATORS		Median	Range	
			High	Low
C	**CAPITAL**			
32	Return on Farm Capital (%)	2	8	-2
33	Debt to Income ratio	0.6	1.4	0.1
34	Farm Equity (%)	87	98	71
35	Value of Effective Area per hectare (owned, leased and sharefarmed) ($/ha)	809	1,123	462
36	Value of Effective Area per family ($/family)	~~524,633~~ 619,545	~~956,516~~ 1,031,207	~~267,666~~ 341,180
37	Machinery Value to Income (ratio)	0.9	1.6	0.6
38	Depreciation/Machinery Value (%)	10	18	6
D	**VIABILITY**			
39	Disposable Income per family ($)	48,508	95,818	14,664
40	Off-farm Income per family ($)	6,255	23,478	1,000
41	Off-farm Assets at June 1994 ($)	93,450	329,630	12,867
42	Total Equity per family (June '94) ($)	842,323	1,535,156	457,080
43	Interest, Lease and Bank Fees/Farm Income (%)	9	22	2
44	Depreciation/Farm Income (%)	10	16	6
45	Tax to Disposable Income (%)	20	47	8
E	**PHYSICAL RESOURCE SUSTAINABILITY**			
46	Water Use - Farm Income/100 mm GSR/Effective hectare ($/100mm/Ha)	68	92	40
47	Nutrient Audit - Fertiliser / Farm Income (%)	9	13	6
48	Herbicides - Sprays/Effective hectare ($/Ha)	18	32	6
49	Disease - % Legume (pasture & grain)/Crop hectare (%)	45	90	18
50	Soil Health - % Stubble Retention (% of total crop)	40	89	3

The majority of the 50 measures are efficiency ratios or unit output per unit input. In addition to this despite the aim of the project being to determine sustainability, there are no measures of growth included, for example EVA (economic value added). Table 13 lists the key performance indicators or business health benchmarks that the project identified for grain farmers over four years of reporting.

Table 13 FAST Business Health Benchmarks. (Source: Planfarm Consultants *et al.*, 1998)

	BENCHMARKS
FAMILY VIABILITY	
Cash flow	Disposable income per family ($'000)
Capital	Return on farm capital (%)
BUSINESS CASH DRIVERS	
Production system	Farm income/ha/100mm annual rainfall ($/ha/100mm rainfall)[4]
Land capital	Land value/family ($'000)
Farm Input costs	Operating costs/farm income (%)
Debt servicing	Financing costs/Total income (%)
Machinery depreciation	Machinery market value/farm income (ratio)
Non farm	Net non-farm income/family ($'000)
RESOURCE USE	
Land productivity	Operating surplus/land value (%)
Labour	Income/labour unit ($'000)

In reality the FAST measures represent nothing more than a traditional comparative financial analysis and provide only limited information about performance. Their use of standards could also be questioned as the data used for each farm represents the average results over a seven-year period. Through averaging individual farm results trend information is lost. On an individual farm, this is of more value than the average performance, especially as market and seasonal fluctuations can easily influence averages. Trend analysis may also show an industry trend e.g. over seven years have farmers in the industry been progressing or regressing.

2.3.4.2.b The Australian Dairy Research and Development Corporation

The Australian Dairy Research and Development Corporation (DRDC) is currently working on developing a set of industry indicators for benchmarking purposes to be applied universally throughout the Australian dairy industry (Cummings, 1999). This is been achieved by consulting with personnel within the industry in both the private and public sector. A list of definitions and calculations, as well as recommendations for the layout and details to be included in dairy farm chart of

[4] Assuming pastoral/cropping business

accounts (i.e. balance sheets, profit and loss statements, cash flow analysis and livestock trading schedules), has also been developed.

DRDC has also developed a list of suggested indicators (Table 14) covering areas defined as profitability (economic), people, sustainability of natural resources and cash (financial). DRDC emphasises three levels at which the business can be analysed:

- Whole business analysis: measuring performance of the whole business operation associated with the farming family i.e. both off-farm and farm income and costs.
- Whole farm analysis: measures farm performance only. All off-farm components of the business are excluded.
- Enterprise analysis: focuses on individual profit centres of the farm business (Cummings, 1999).

However, it is recognised that in many cases there is often little difference between the three levels because the dairy business is the overwhelming component of the family business.

Table 14 DRDC Recommended Performance Indicators. (Source: Cummings 1999).

Profitability (Economic Analysis)
Key Performance Indicators
❖ Return on assets (EBIT/Assets used)
❖ Equity % (Net Assets/Total Assets)
❖ Change in Net Worth (closing Net Worth less opening Net Worth)
Secondary Indicators
❖ Proportion of cost components to Income (Variable, overheads, finance/Total Income)
❖ Asset turnover ratio (Total Income/Total Assets)
❖ Profit margin ratio (EBIT/Total Income)
❖ Return on Equity (Net Profit/Net Assets)
Tertiary Indicators
❖ Interest cover (EBIT/Finance costs)
❖ Debt/Income (Total Liabilities/Total Income)
❖ Net Profit
People Measures
Key Performance Indicators
❖ Holidays in last 12 months (nights off farm)
❖ Training days per labour unit per year

- Hours worked per week per labour unit

Secondary Indicators

- OH&S – days per annum list dew to accident and illness
- Do you have a written business plan? Yes/No
- Staff turnover (average length of service for permanent staff = years per person

Tertiary Indicators

- Dou you have a written succession plan?
- Have you updated you wills in the last 5 years?
- Hours of paid off-farm work per week
- So you have insurance cover for loss of income?

Sustainability of Natural Resources

Key Performance Indicators

- Nutrient balance (input compared to output)
- Production per unit of water (e.g. litres/ha/100mm rainfall and irrigation water used)
- Is there a written whole farm plan? Yes/No

Secondary Indicators

- Involvement in Landcare initiatives in days per farm per annum
- Does the farm have an animal welfare plan?

Tertiary Indicators

- Percentage of farm area with tree/shelter cover
- Rate of pasture renovation (% farm covered with improved/renovated pasture per year)
- Irrigation intensity (ML/ha)

Financial (Cash Analysis)

Key Performance Indicators

- Cash surplus per household
- Cash surplus per labour unit
- Cash surplus per kg milksolids (or litre)
- Cash expenses to cash income ratio

Secondary Indicators

- Dairy margin over purchased feed costs per litre (milk income less purchased feed costs)
- Dairy margin over all feed costs per litre (milk income less all feed costs)
- Debtor days (Debtor/Sales x 365 days)
- Creditor days (creditors/sales x 365 days)
- Inventory days (inventory/sales x 365 days)

The focus of DRDC is to identify 'best practice' in dairy business management as opposed to dairy farm management. "*The aim is to measure the most profitable dairy business and to determine the specific dairy farm practices that enable them to be more profitable in the long run*" (Cummings, 1999). However, one could argue that there should not be a need to distinguish between dairy business management and dairy farm management. While the current level of 'benchmarking' in the Australian dairy industry is restricted to comparative analysis, DRDC's attempt to standardise the calculations and formats used within the industry is very important in adding accuracy to existing comparative analysis and for setting up the industry for benchmarking.

2.3.4.2.c Dairy Excel, Ohio State University

Dairy Excel is an extension programme run by the Ohio State University, which is looking at ways of improving the competitiveness of dairy farms in northeastern Ohio. From their work, they have identified fifteen measures that they believe measure dairy farm competitiveness. The identification of these measures came from analysis and discussion with top performing farmers and the American Farm Financial Standards (Polson, pers comm.) The fifteen measures are broken down into to categories, these are:

- Rate of production
- Capital efficiency
- Liquidity
- Solvency
- Motivated labour force
- Cost control
- Profitability
- Debt servicing
- Mission
- Ability to maintain family's lifestyle

Each measure is explained in terms of what it measures how to interpret the information, what an acceptable level is deemed to be, and what management changes can be made to improve the measure. Particular importance was placed on describing the calculations at the simplest mathematical level to ensure that they did not create a barrier to their use (Polson, *pers. comm.*)

Table 15 Dairy Excel's 15 Measures of Dairy Farm Competitiveness. (Source: Polson *et al.,* 1997).

Measure	Competitive level	
Rate of Production		
1) Pounds of milk sold per worker	Tie stall/stanchion	Free stall-parlour
Large breed	≥ 600,000	≥ 1,000,000
Small breed	≥ 450,000	≥ 750,000
Cost control		
2) Total feed cost per cwt. of milk sold	≤ $6.00 per cwt.	
3) Milking herd feed cost per cwt. of milk sold	≤ $4.00 per cwt.	
4) Operating expenses ratio	≤ 70 percent	
Capital Efficiency		
5) Dairy investment per cow	≤ $6,000 per cow	
6) Asset turnover ratio	≥ 0.50	
Profitability		
7) Net farm income (NFI)	≥ $75,000 per owner/operator family	
8) Rate of return on farm assets (ROA)	≥ 11 percent	

Liquidity	
9) Current ratio	≥ 1.3
Repayment Schedule	
Scheduled debt repayment (principal, interest and capital lease)	≤ 20 percent of gross receipts
Solvency	
10) Debt to asset ratio (D/A)	≤ 40 percent
11) Debt per cow	≥ $2,000 if not expanding ≥ $3,000 if expanding
Mission	
12) The management team agrees on why they are in business.	Written mission statement.
Maintain family's standard of living	
13) Owner/operator(s) maintain or increase their standard of living by continual change to adopt proven technology, capture economies of size so that family(s) supported by the business can maintain their standard of living.	Expand herd 60 percent every year.
Motivated labour force	
14) Managers use personnel management practices that lead to well-trained, enthusiastic, empowered family members and employees who share a commitment to the mission and goals of the business.	

2.4 Production Indicators

Physical production indicators assist in providing a more holistic view of the business by showing how certain resources have been allocated. Many of the efficiency ratios combine financial and physical data to determine measures such as cost of production (MAFF, 1980). Physical indicators can be any piece of information, relevant the way managers' wish to run their business.

The most commonly used physical indicators on dairy farms are production per cow and production per hectare. Production ratios are commonly used to make comparison between seasons and between farms. Normally the emphasis is on achieving higher production ratios, and the implications of the necessary actions to achieve these are not monitored in the financial measures and therefore go unnoticed. Shadbolt (*pers. comm*) goes so far to say that those measures based on per cow or per hectare are becoming increasingly irrelevant as farmers (especially New Zealand farmers) move towards purchasing greater quantities of supplements off farm, i.e. maize silage, cereal grains, processed pellets, and grass silage. Production measures no longer reflect output efficiency of the so-called pasture-

based farm. Given this trend in dairying, production measures must be modified to provide information that is more meaningful for comparisons, whether it be within or between-farms. For example using measures based on per unit of output (kg MS) may be more meaningful than per unit of input measures (cows or hectares).

2.4.1 Calculations

kg MS per cow = total kg MS ÷ number of cows[5]

kg MS per hectare = total kg MS ÷ effective milking area (ha)

Stocking rate = number of cows ÷ effective milking area (ha)

Tonnage or number of rolls of silage/hay made

Submission rates, mean calving date, calving spread, number of inducements

Heifer production as a percentage of mature cow production

Nutrient audit (kg NPKS applied versus kg NPKS removed) (Edmeades, *pers. comm.*)

Bulk Milk Cell Count information (whole herd and specific groups)

Breeding values or indices

Area repastured and area cropped per year

kg MS per kg supplements fed and/or purchased

Income per kg dry matter consumed

Pasture utilisation = pasture consumed ÷ pasture grown

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[5] Parker (1997) refers to several methods used by farmers for calculating stock numbers
Number of cows wintered = older cows + rising two years heifers (in calf)
Number of cows calved into the herd = wintered cows - loses and sales up to calving.
Number of cows peak milked = maximum number of cows milked at peak of lactation. This normally occurs 6-8 weeks after the mid-point of calving. May be up to 10% less than cows wintered.

Feed conversion efficiencies

Condition score of milking cows at key times (e.g. drying off, calving, mating, late lactation)

Required pasture covers at critical times vs. actual (e.g. calving, drying off, end of first rotation post calving, mid December)

Actual cow intakes vs. required cow intakes (especially at key times e.g. early lactation, mating, summer, dry period, winter, pre-calving)

Nutritional quality of pasture and supplements vs. cow nutritional requirements

Actual young stock weights vs. targeted weights (e.g. weaning, mating, and calving)

Cows milked per labour unit

Response rates of grass growth throughout season to urea (N) applications

2.4.2 Relevance

Production measures are often set as targets and then monitored closely to ensure that those targets are met. For example, a rule of thumb is that average pasture cover at the point of calving should be 2,200 to 2,500 kg DM/ha. If the herd was dried off on the 30th April with an average pasture cover of 1,500 kg DM/ha and calving commenced on the 10th July there is 61 to 71 days for pasture cover to increase by 1,000 kg DM/ha. Before drying the herd off the farmer will have done a feed budget, based on historical growth rates, for the winter to determine whether the cows should be wintered off the farm. The farmer will monitor activities such as pasture growth over the required period. The use of nitrogen will be added into the farmer's feed budget based on actual growth rates and the expected response rate for the given time of the season.

The other aspect of winter management the farmer must consider is the feed requirements for the herd. Intakes will be calculated and based on the current condition score and the condition score required at calving. If pasture growth is insufficient to meet cow requirements while increasing the overall pasture cover then

the farmer will make a decision about feeding supplements or wintering the cows off the farm to ensure that the correct level of pasture is achieved by the set date.

Production measures may also be used retrospectively. For example, if milk income was lower than expected and milk price remained unchanged from the previous year then production is the cause for the lower milk income. To investigate why milk production was reduced pasture production for the year may be investigated. Ideally though this would have been regularly monitored, via feed budgeting, throughout the year. Alternatively, the calving pattern may be investigated to identify the proportion of late calving cows as this detrimentally influences not only the lactation length of the individual cow but also that of the herd through reducing the average number of days in milk (Holmes and Wilson, 1987). If there are problems with the calving spread was this seen in the mating season i.e. submission rates. Animal health issues might be investigated for factors such as the number of induced cows, the level of somatic cell counts and the proportion of heifers in the herd.

While physical indicators provide important feedback to the farm manager they are unable to present a complete picture of business health. This is achieved only when both physical and financial measures are combined. The further development of physical indicators, remains important because of their extensive use by farmers. However in this research physical indicators are introduced but play a minor role due to the strategic management focus.

2.5 Financial Performance Indicators

2.5.1 Solvency

Solvency measures the liabilities of a business relative to the amount of owner's equity invested in the business as well as providing an indication of the ability to pay off all financial obligations (Kay and Edwards, 1994).

2.5.1.1 The calculations

Indicators in this category are typically measuring financial risk that is the ability of the business to meet all of its financial commitments. Three indicators are commonly used to measure solvency and they can be calculated from the balance sheet.

Debt: Assets = total farm liabilities ÷ total farm assets

Equity: Asset = total farm equity ÷ total farm assets

Debt: Equity = total farm liabilities ÷ total farm equity

2.5.1.2 Relevance

Solvency ratios typically measure the structure of total assets and total liabilities of the business and look at the business' ability to pay or cover its liabilities (debt: asset). A business is insolvent when total liabilities exceed total assets. It is illegal for a company to trade in this situation.

The equity:asset ratio shows the owner's financial commitment to the business. The final solvency ratio is debt:equity, also known as the leverage ratio, which represents the business' total obligation to creditors as a percentage of the equity capital provided by the owners (Barry *et al.*, 1995). Leverage shows the extent to which borrowed capital is used to supplement and expand the equity capital i.e. it is a reflection on how business expansion (asset acquisition) has been financed. The leverage ratio increases as the debt to asset ratio increases, that is, as debt increases disproportionately to the asset value (Kay & Edwards 1994). However, this ratio does not indicate the optimal level of leverage (Barry *et al.* 1995).

2.5.2 Liquidity & Debt servicing Capacity

These ratios measure the ability of a business to meet financial commitments as they fall due. This information is available from the balance sheet. Another ratio that is commonly used in practice is the change in net indebtedness.

2.5.2.1 The calculations

Current ratio = Current assets ÷ Current liabilities

Working Capital = Current assets - Current liabilities

Debt Servicing as % of Gross Farm Income = Interest ÷ Gross Farm Income

Times Interest Earned = (GFI – Total Expenses +Interest) ÷ Total Interest Charges

Net Indebtedness = Total Liabilities – (Current Assets + Liquid Investments)

Change in Net Indebtedness = Net Indebtedness Year (N) – Net Indebtedness Year (N-1)

2.5.2.2 Relevance

Liquidity demonstrates the number of times the current assets cover the cost of the current liabilities. At a minimum, this ratio should equal one, as this means that the current assets equal the cost of the current liabilities. A ratio greater than one means that current assets exceed those required to cover current liabilities.

Working capital is an absolute measure of liquidity, if it is positive, then current assets are able to cover the cost of the current liabilities.

A business can cash in its current assets without affecting the operational status of the business, however, should fixed assets have to be sold to cover current liabilities then the operational status of the business is affected. Bankruptcy occurs when a business is unable to pay its short-term commitments without liquidating fixed assets (Barry *et al.* 1995).

The ratio of interest as a percentage of gross farm income provides an indication of the business's exposure to financial risk i.e. its financial commitment. For dairy farms a general target is to be below 30 per cent: if it is any higher, working expenditure is likely to be compromised and unsustainable farming practices may result.

The Times-Interest-Earned (TIE) ratio is a measure of a business' ability to meet its interest payments. The greater this ratio the more easily the business can meet its interest payments without compromising operating performance.

The relevance of the liquidity ratios for dairy farms may be questioned as financial accounts are often prepared at the end of the milking season (dry period) when minimal income is received yet there are still accounts to be paid, hence dairy farmers tend to operate in overdraft over the dry period. This reflects in the accounts as negative working capital and very low liquidity ratios. Monthly cash flow analysis is more valuable as a measure of financial management or liquidity.

The net indebtedness ratio is commonly used by the banking profession as it represents the core debt of the business as it combines both solvency and liquidity issues. The ratio depicts the level of debt that is covered by the fixed assets of the business. The sale of these assets could have serious implications for the business' viability. A decreasing trend in the level of net indebtedness is desirable as it means that the core debt is becoming a lesser proportion of the fixed assets. The change in net indebtedness must be interpreted in conjunction with movement in asset valuations and acquisitions, and debt accumulation to gain an accurate picture of why the change occurred.

2.5.3 Profitability

These ratios measure the relative profit performance of a business, enterprise, or other operating unit. The measures used to evaluate profitability are return on assets (ROA) and return on equity (ROE).

2.5.3.1 The calculations

ROA = (NFI[6] + Debt Interest - Management/Unpaid Labour Reward + Other Farm Income) ÷ Total Farm Assets

ROA = EFS[7] ÷ Total Farm Assets

[6] NFI = Net farm income = Gross farm income – (total farm expenses + depreciation).

[7] For definition and calculation of EFS refer to Section 2.5.5

ROE = (NFI– Management/Unpaid Labour Reward + Other Farm Income) ÷ Owner's Net Worth

2.5.3.2 Relevance

The return on assets (ROA) represents the earning capacity or profitability of the asset base, for example a ROA of 15% means that every dollar of assets is earning 15 cents. Because the return on asset ratio shows profitability per dollar of assets it can be used to comparing businesses of different size as well as those in different industries (Boehlje 1994).

Return on equity (ROE) is a measure of the return that is achieved by the owner's invested capital and is specific to a farm business. The ROE ratio can be used to compare returns from other potential investments, although it does not account for asset revaluation (Makeham & Malcolm 1993). Fluctuations in ROE reflect variations in income and expenditure. Negative returns on equity occur when the net taxable income is negative, meaning that additional costs have been incurred in having capital invested in the farming business.

The profitability measures are unique to a business because inputs, resources and outputs are specific to a business. Changes in these ratios need to be considered in relationship to the other changes that are occurring within the business (Barry *et al.* 1995). A downside to these ratios is their reliance on asset valuations. If assets are undervalued, in particular land and improvements, then the ratios appear very high giving a false sense of achievement to the manager and misrepresentation to other interested parties. Trend analysis also becomes difficult if asset valuations are constantly changing. A sound representation of asset valuation, for example government valuations, must be obtained and used consistently to ensure that meaningful interpretation is gained from these measures.

2.5.4 Efficiency Measures (including labour)

There are a vast range of efficiency ratios: anything that can be represented as an output/input ratio is a measure of efficiency. However, it is dangerous to use efficiency ratios as the only measure to implement change. Efficiency ratios must be put into context with other measures as well as the objectives of the business.

Candler and Sargent (1962) are scathing of those who assume "*that more efficiency is better than less*" because increasing farm efficiency "*is not an obvious farm management objective, when efficiency is defined as a simple ratio*". Efficiency measures together contribute to a holistic view of the farming operation but in isolation are not much more than a number.

Efficiency measures include capital (or asset) turnover ratio, revenue per employee, productivity per employee and revenue to labour ratio. The value of efficiency ratioh is dependent on the information sought and its relevance to improvements or changes to the business plan.

2.5.4.1 The calculations

Capital Turnover Ratio = Gross Farm Income ÷ Total Assets

Revenue Per Employee = Gross Farm Income ÷ Number of Employees[8]

Productivity Per Employee = Total Production[9] ÷Number of Employees

Revenue: Labour Ratio = Gross Farm Income ÷ Cost of Labour[10]

2.5.4.2 Relevance

The capital turnover measure represents the efficiency at which the invested capital is being utilised in generating the farm i.e. it is a representation of the volume of business being generated by the business (Boehlje 1994).

The labour efficiency measures look at the real value in employing labour. With the revenue per employee measure it would be expected that employees are generating, at the very minimum, their wages. The revenue:labour ratio is another way at looking at this area, "How many times does revenue cover the total cost of all labour?" Productivity per employee represents labour efficiency at a physical level and should be closely related to the financial measures. Of the three measures the

[8] Includes unpaid labour units.

[9] Total production being measured in kg Milksolids, kg Protein, kg Milkfat or Litres.

revenue:labour cost ratio is the most valuable as it provides a representation of the return generated by the investment in labour.

Caution needs to be exercised with the labour ratios when comparing them between farms as the type of farming system and labour market can be substantially different. If labour is cheap and readily available then a business may choose to employ more staff, which will be reflected in low revenue per employee and productivity per employee but this may not have a large impact on the revenue:labour cost ratio. In countries where labour is more expensive, such as Australia and New Zealand, the first two measures tend to be quite high but there may be little difference in the revenue: labour cost ratio.

2.5.5 Revenue Generation & Cost Control Measures

These measures are all concerned with the business' ability to generate income and control expenditure. The measures examined here are economic farm surplus (EFS), operating profit margin and net operating profit after tax (NOPAT).

2.5.5.1 Calculations

Net Farm Income (NFI)= Gross Farm Income – (Total Expenses + Depreciation)

EFS = NFI + Interest – Value of Unpaid Labour & Management ± One-Off Income (Costs)

Operating Profit Margin = EFS ÷ Gross Farm Income

NOPAT = EFS – Notional Tax Payment

2.5.5.2 Relevance

Economic farm surplus is a measure of the operating profit of the business and is based on matching costs in any one year against the income generated by those costs. It is important to realise that it does not represent the overall profitability of the

[10] Including unpaid labour and management.

business (Shadbolt 1998a). Shadbolt (1998a) highlighted some problems associated with calculating of the EFS measure:

1. Accountants are not always rigorous in ensuring that expenditure is accurately matched to income. For example, feed supplements may be purchased in one season but not fed out until the following season therefore expenditure and income are not matched correctly in the accounts and the EFS calculation will be inaccurate if the situation is a "one-off" event.

2. There are currently multiple methods for calculating EFS, which makes comparisons between values difficult and potentially misleading. Candler & Sargent (1962) have previously voiced their concern about this issue. Ideally a single calculation needs to be adopted or the calculation method must be reported so that the appropriate adjustments can be made to ensure useful comparisons are made.

3. Continuous adjustment of expenditure and income is required to ensure that a true operating profit is recorded. To minimise tax, capital development items can be included in operating expenditure; if this is not adjusted for it will reduce the level of EFS, thus falsely reflect the farm operations.

The EFS is commonly used to compare between farms as it is based on operational data only which most farmers are agreeable to providing. However EFS only represents a part of the business. Fixed costs are not included and can often contribute significantly to costs, therefore it is possible to have very high EFS or operating profit, which is desirable, but have very low overall profitability.

Operating profit margin is the rate of operating profit produced by the business and is an indication of the business' "ability to increase revenues and cost controls in such a way as to generate profit" (Boehlje 1994). For example an operating profit of 30%

means that for every dollar of gross farm income, 30 cents is retained as operating profit, which is then available for personal drawings, taxation, capital expenditure and savings. Boehlje (1993) states that often too much emphasis is placed on product prices instead of profit margin, which is a function of, input prices, efficiency and product prices. The producer's control over cost of production is the more important concept to focus on. Producers have little if any control over commodity prices.

A major assumption for the EFS value is that the farm is being operated in a sustainable manner, that is the productive capacity of the land is being maintained. If this is not the case then ideally adjustments should be made to correct for the reduction or increase in expenditure. For example if the farm does not receive fertiliser for two years then it is quite possible that the EFS for those two years will be high due to the lack of spending on fertiliser being treated as a cost reduction and therefore improved profit generation as shown in the EFS value. In fact, soil fertility levels may be declining, thus reducing the productive base of the farm.

NOPAT is the EFS less taxation payments. From the NOPAT expenses such as personal drawings and capital expenditure are removed, and any remaining funds represent savings that contribute to the value of current assets thus improving liquidity and providing a cash flow buffer.

2.5.6 Savings Behaviour

The reinvestment rate provides an indication of the savings behaviour of the business. Boehlje (1994) describes it as "the ability to save and reinvest part of what you make".

2.5.6.1 Calculation

$$\text{Reinvestment rate} = \text{Change in owner's equity} \div \text{NFI}$$

2.5.6.2 Relevance

This measure is only meaningful if both changes in owner's equity and net farm income are positive as it measures the proportion of net farm income retained for growing the owner's equity. Capital gains should not be included in this calculation

as they are generally unrelated to the financial performance of the business and beyond the control of management.

2.5.7 Growth and Value Creation

2.5.7.1 Value based management

Value based management is a finance-influenced view on the business which focuses on shareholders interests either exclusively or dominantly (Walters 1997). Its most useful aspect is the ability to separate the operating and the financing components of the business. Traditionally companies have focused on short-term earnings, disregarding the cost of capital required to generate them. The cost of capital has been someone else's problem and its effect on shareholder earnings has often been overlooked (McWilliams 1993). Some experts claim that value is the best metric for performance because it requires complete information about the business (CSBS, 1996e).

The concept of growth focuses on the cost of capital and the operating profit, which represents the trade-off between risk and reward for invested capital. This approach measures growth according to the increase in shareholders' (or equity provider's) wealth. Increased wealth occurs when the NOPAT exceeds the cost of capital when considering the dairy business in isolation from the property business. With the inclusion of the property business there is the opportunity for increased wealth through capital gains, however the true value of capital gains is never known until an asset is sold. The cost of capital therefore sets the minimum level of return that new investments must deliver.

A business that is increasing shareholders' wealth i.e. returns are greater than its cost of capital, has the ability to:

- Attract lower cost capital
- Reinvest more easily
- Develop new products and services
- Look after its people and customers and

- Provide more business to its suppliers (CSBS, 1996d).

The drivers of value are profit, growth and cash generation; one cannot occur without the others. In business, the focus has changed from profitability to cash generation, which emphasises the importance of determining the cost of capital. Too high a rate may stifle growth whilst too low a rate may lead to poor investment decisions (CSBS, 1996f).

The method used to calculate value added in this research was be Economic Value Added (EVA). EVA is equivalent to an economic rent. EVA is what is left over after the cost of capital has been deducted from the NOPAT and represents either an addition or a decrease to the value of the business. To quote van Zyl & Perkins (1994) EVA is "*the dollar amount that managers of the business have added or subtracted from capital invested in the business for the year under review*".

$$EVA^{®} = NOPAT - Cost\ of\ Capital$$

2.5.7.2 Cost of Capital

Fundamental to value-based management is the cost of capital, which traditionally has been ignored in the farming sector or simply assumed to be the cost of debt. The equity component and the fact that farmers have capital invested in the business is normally overlooked. The focus is usually on external debt alone. The cost of equity represents the equity holder's requirements from the business. By not including the cost of equity, the true financial structure of the business is ignored.

The cost of capital comprises two components: the cost of debt and the cost of equity. The cost of debt is determined in the following way:

Cost Of Debt = Interest & Charges on Term Loans Adjusted for Tax Credits

Cost of Debt ≈ Interest Payments x (1 – Notional Tax Rate)

The calculation for the cost of equity used in this research followed Shadbolt's (1998) recommendation, which she has based on the Gordon growth model as opposed to the capital asset pricing model (CAPM). The Gordon growth model is based on

dividend yield expectations i.e. family requirements, excluding capital gains, whereas the CAPM represents the opportunity cost of the investment (CSBS, 1996f). The cost of equity is slightly more complex to calculate:

Cost of Equity = Personal Drawings Greater Than the Post-Tax Reward for Unpaid Labour & Management + Change in Net Indebtedness

Cost of Equity = (Drawings - (Unpaid Labour x (1 - Notional Tax Rate))) + Debt Repayments

The cost of equity can also be calculated as a stated percentage of net worth thus representing a dividend yield. However, it must be recognised that as an absolute figure the value will remain relatively constant though as a percentage there will be variability based on the change in net worth.

The cost of capital can be calculated by adding the costs of debt and equity.

Cost of Capital = Cost of Debt + Cost of Equity

2.5.8 du Pont Analysis

Increasing operating performance can be achieved in one of two ways:

- Increasing the operating profit margins and/or
- Increasing the volume per dollar invested or capital turnover (Boehlje 1994).

The assumption made with the du Pont analysis system is that return on equity is the primary goal of the investor. Consequently, the du Pont equations look at the components that affect return on equity: operating profit margin, capital turnover and leverage. The du Pont analysis system allows these three components to be monitored and give immediate feedback as to how changes in one or more of the components will affect the return on equity (Boehlje 1994).

The du Pont model separates finance from operations. Another way of looking at the three components is that they represent profitability, activity and return on net

assets, which combined, give a rate of ROE. Therefore the du Pont analysis allows "the interrelationships between many performance measures to analyse the components and linkages of a business" (Barry *et al.*, 1995).

2.5.8.1 The du Pont Calculation.

ROA = Operating profit margin x asset turnover ratio

ROE = (ROA – (interest ÷ total assets)[11]) x financial structure[12]

2.5.8.2 Relevance

The du Pont equation neatly demonstrates how the different combinations of operating performance and financial structure can generate the same end result. Thus, the du Pont equation provides farmers with a tool to improve their understanding of financial performance drivers and to evaluate strategies that could improve performance (Boehlje 1994).

The three major drivers of the du Pont equation are impacted by specific decisions on cost control, efficiency and productivity, and marketing decisions. The equations' format is therefore able to capture the impact of almost any management decision that is made (Boehlje 1994). Any decision that modifies product prices, per unit costs, volume or efficiency/productivity i.e. output per unit input, will impact either the profit margin or the turnover ratio. Alternatively, any decision that alters the amount of debt and equity used will impact the financial structure as well as the cost of capital (Boehlje 1994). The ROA must be equal to the level of WACC if equity is to be preserved (Barry *et al.* 1995).

The du Pont analysis, whilst providing a framework for viewing the interrelationships within a business, has a number of limitations (van Zyl and Perkins, 1994):

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[11] Boehlje (1994) refers to (interest ÷ total assets) as an interest cost adjustment

[12] Financial structure = total assets ÷ owner's equity

- ❖ It is a short-term measure only.
- ❖ It is a before tax measurement.
- ❖ It is difficult to set a good target for ROA.
- ❖ There is no linkage to the cost of capital.
- ❖ There is no linkage to the time value of money.
- ❖ There is no linkage to value.

Despite this, it still has value in providing a mechanism by which farmers can develop their understanding of the financial components that are essential to business health. Yet, it is not widely used by farmers if it is used at all. This may be a reflection of the level of financial monitoring undertaken by farmers or of their level of mathematical skills. More likely however is that it is a reflection of the financial training received by farm advisors. If the professionals servicing farmers are unfamiliar with the concept of the du Pont equation then its use by farmers is likely to be restricted.

3 Methodology

In this chapter the theory of the case study research is introduced and discussed and the research process is described.

3.1 Introduction to the Case Study Technique

An important feature of the case study is its holistic approach. The case study seeks to capture people as they experience their natural, every day circumstances while offering the researcher both empirical and theoretical understanding of the complexity and impact of the social environment (Feagin *et al.*, 1995). The case study technique enables multiple sources of evidence to be collected and in a wide variety of formats, such as documents, open- and closed- ended interviews, quantitative analysis of archival data and direct field observations (Yin 1993). The multiple sources of data should be used in a converging manner to reach conclusions. Both qualitative and quantitative data are relevant to the case study technique. The ability to use multiple data sources through a case study approach allows both processes and outcomes of the research subject to be covered (Yin 1993).

Yin (1993) characterised case studies as requiring an extensive degree of preparation so that the following questions can be answered:

1. How are you going to define your case?
2. Is it a single or multiple case study? If multiple, should they be done sequentially or in parallel; and if sequentially, in what order?
3. How should the case be bounded with regard to time, participants, and relevant evidence?
4. What are you seeking to prove, conclude, or observe?
5. How should you decide whom to interview, and how long should the interviews be? What type of interview instrument, if any, should be used?

6. How should other sources of evidence be dealt with, and what happens if events change drastically during the case? Are contingencies in place or will the case be started from the beginning again?

7. What will happen to notes and other material when it is time to 'write up' the case?

The design of a case study must be based on a comprehensive understanding of the aims of the research (Yin 1993).

3.2 The Research Process

The multiple case study design was selected as being most appropriate for testing the hypothesis that "farmers do have adequate key performance indicators for measuring goal attainment" and also for investigating how farmers monitor and measure business performance. The aim was to collate the information across cases so that trends and findings could be summarised with respect to the hypothesis. Case studies were conducted in parallel, that is, they were conducted during the same period: the sequence of cases was not considered an important factor and would have been possible within the time constraints.

One sector of the dairy farmer population was focused on to reduce variation between farms. The farmer group selected was owner-operator dairy farmers. Other criteria for farmer selection was an interest in the subject matter, and willingness to share their time and disclose information about both themselves and their business. Ten case farms were studied during the research. Seven of the farms were recommended by a local farm consultant on the basis that they were owner-operator dairy-farmers and that he considered they would be interested in the research topic. The remaining three farms were selected through the researchers personal contacts. The farms were located areas of the Manawatu, Wairarapa and the Horewhenua-Kapiti Coast region. Five of the farming couple were aged between 30-45 years, four farming couples were aged between 45-50 years and one farming couple were in their mid fifties. Nine of the farms were established farm businesses and one farm was in the process of purchasing land from family members. Two of the farms were

expanding their herd size while the remaining eight farms were in a consolidation phase of their life cycle. This is not to say that they did not plan further expansion.

The data sources used during this research, based on Yin's (1994) classification, were documentation, archival records, interviews, and direct observation. Documentation provided supporting evidence about data already collected, while archival information was pre-recorded, the relevance of which is dependent on the ability and systems of the individual cases to record information accurately. However, it is important to note that the source of information used in this research was initially prepared for a different purpose, which can create problems. In this case, the supporting documentation used was taxation accounts which are often not prepared to provide management information or are in a format that is user-friendly to farm managers. Interviews provided a wide range of data. Typically for case study investigations, the questions are open-ended to allow the respondent to provide factual data as well as personal opinion. The interviewer also has the option of asking the respondents to propose their own insights into a particular event or occurrence (Yin 1994). The interviews conducted during this research were unstructured, that is they took on the appearance of a normal day conversation (Minichiello et al., 1996). However, the conversations were controlled as data had to be collected about particular topics. Questions were asked in an open-ended manner and respondents were encouraged to express their feelings and opinions. McCracken (1989) highlights the role of the investigator as a kind of instrument in the collection of and analysis of data. The investigator "*cannot fulfill qualitative research objectives without using a broad range of his or her own experience, imagination, and intellect in ways that are various and unpredictable*" (Miles, 1979 cited in McCracken, 1989). Therefore while every attempt was made by the interviewer to remain objective it is difficult to claim total objectivity.

The first step in the information collection process was to identify farmer values, issues, and criteria for their success. A semi-formal worksheet was left with farmers so that information about their values and belief could be collected (Appendix A: Value Identification and Mission Statement Worksheet). As this information was personal, the farming family was allowed to identify the information in their own time and when all family members were present. The worksheet was returned to the

researcher before the next farm visit. While farmer interviews were informal, a checklist was used to ensure that the required data was collected.

During the first visit a farm walk was undertaken to gather descriptive information about the business and to assist in the rapport building process (Williams, 1997). Questions, from the farmer, pertaining to the research were answered in more detail if required and at the conclusion of the visit, and worksheets were left for the farmers to complete regarding their values and beliefs. The farm accounts and production data for the past six years were collected for the business analysis. Farmers were asked how they currently monitored and measured business performance and why they used those techniques and measures. Also they were asked "with what or whom did they compare their farm data?" From the value and beliefs information, the strategic intent was determined and a mission statement was developed where necessary. This was achieved by identifying and linking key phrases, terms and concepts from the farmer answers in the worksheet questions. The initial statement was then presented to the farming couples for discussion and "fine-tuning" of the wording until they felt comfortable with and supported the statement.

The business analysis involved the internal analysis, including competency analysis, as well as creating statements of cash flows, historical analyses and calculating a range of ratios to gain an understanding of the operational, financial and economic components of the business. The business analysis focused on the areas of production, solvency, profitability, revenue generation and growth as recommended by Boehlje (1993). About 30 indicators were consistently used throughout each business analysis. All ratios used are defined in Sections 2.4 and 2.5. The reward for unpaid management and labour was based on the 1994-95 Livestock Improvement Corporation's method of:

$25,000 for up to 200 milking cow

$25,000 + $125 for every milking cow over 200 (LIC, 1996)

The focus of the business analysis was to determine the performance of the farming business, excluding the property business and therefore capital gains. To remove the influence of the vagaries of asset valuations, constant values were imposed on the land and stock for asset valuation for all farmers. Land values were based on the

most recent government valuations for each case farm and stock were valued at the 1998 Inland Revenue Department's National Average Market Values (NAMV) used in the herd scheme. The livestock schedule from the each farm's financial statements was used to determine the stock numbers however there was no distinction between breeds. By using constant values the impact of management was isolated.

From the business analysis, the researcher identified some of the likely strengths and weaknesses of the farm i.e. where farm values were very different from industry or local norms. Trend analysis was conducted on a within-farm basis using the Microsoft Excel® regression function. A line of "best fit" was determined and the regression coefficient calculated.

The second farm visit involved clarifying issues raised from the analysis of the initial data set. This included explanations for outlying values or confirming the meaning of an account entry. Farmers were then asked to go through a worksheet prepared by the researcher where they assessed their own strengths and weaknesses through a series of graded questions as well as any they identified themselves. The business analysis was presented to the farmers, explained, and discussed. The value information was "double checked" using value statements (Appendix B: Value and Goal Statement Summaries) sourced from the literature (Gasson, 1973; McGregor *et al.*, 1995) to reinforce the focus of farmers' strategic intent. Farming couples were asked to grade these statements between 0 (not at all important) and 8 (very important). The strategic choices identified through the business analysis, the strengths and weaknesses worksheet and the ranking of goal statements, were considered for their ability to be achieved.

The concept of the balanced scorecard was discussed with each farming couple and a typed description and diagrams (Figure 9and Figure 17) was also provided. Time was allowed for the farming couples to read this material. Using the Balanced Scorecard framework shown in Figure 17, the previously identified strategic choices were placed under the appropriate quadrant of the balanced scorecard. The crucial concept of the Balanced Scorecard is that a strategy has been formulated and is understood and accepted (Butler *et al.*, 1997). Where farmers struggled to identify strategic choices, because the farm strategy was absent, time was spent in an attempt to help them identify relevant strategic objectives for the four areas of the scorecard.

This was done through discussion focussing on their goals and how they would achieve them. If this was achieved milestones and end-points related to the strategic objectives were determined through a process of "*how and why*" and "*if and then*" questions which aimed to identify the cause and effect relationships. The cause and effect relationships in the farm strategy were used in an attempt to create a chain of lead and lag indicators that ultimately form a balanced scorecard for the business (Kaplan and Norton, 1996b). The relevant indicators relate to measuring progress as the strategy is implemented to achieve the vision, mission and strategic intent of the individual farming businesses. Figure 17 demonstrates the linkages between the four components of the Balanced Scorecard.

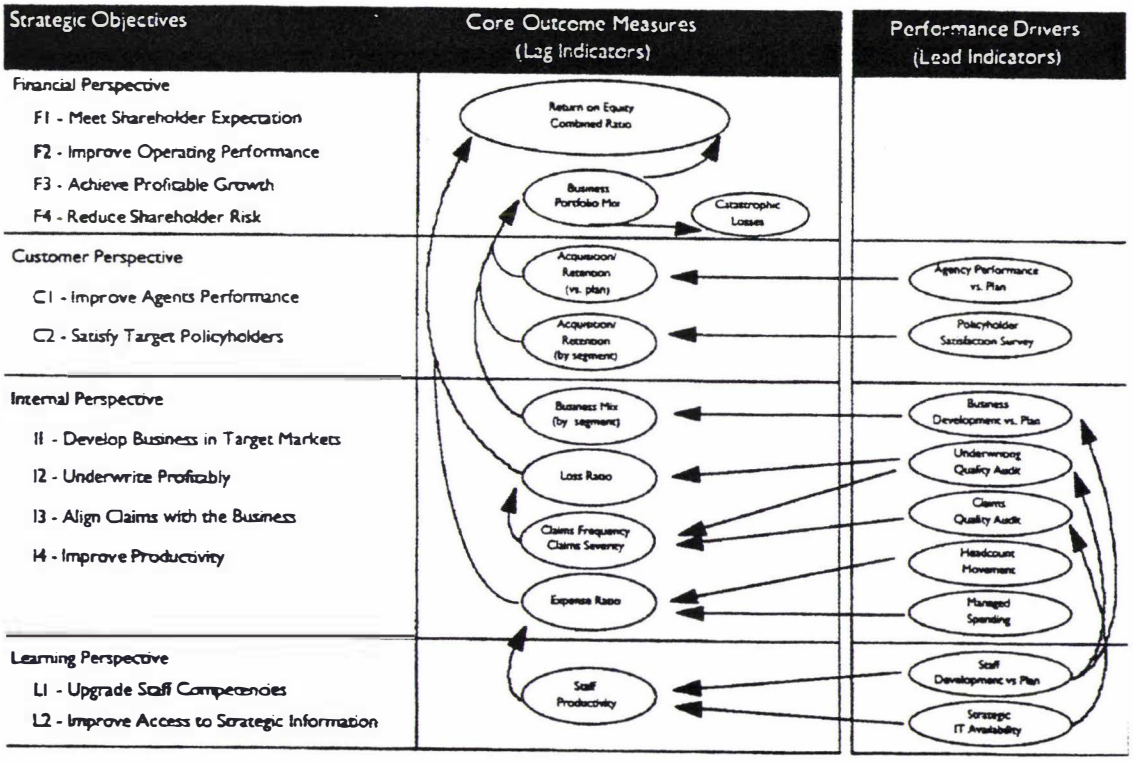

Figure 17 The linkage of cause and effect relationships with lead and lag indicators to reach the final outcome. (Source: Kaplan and Norton, 1996b).

Following this process one of several outcomes would occur. First, that key performance indicators related to the farm strategy would be identified. Second, that key performance indicators would not be identified but that strategic objectives would be. Third, that a lack of understanding in strategic management resulted in neither strategic objectives or key performance indicators being identified. The research outcomes are discussed in Chapter 4.

4 Results

4.1 Case Study Farm One:

4.1.1 Introduction:

Case farm one is a 200-cow seasonal supply dairy farm on 89 hectares (75 effective ha). The farm has been in the family for 100 years. An 80 ha run-off block was purchased in the 1993-94 year for grazing young stock and a 28 ha block was leased in the 1994-95 years for dry cow grazing and production of supplements. The 80 ha run-off is about 80 km from the home farm, while the 28 ha is about two kilometers from the home farm. The farm business is currently operated as a partnership, however the farming couple are looking at changing the business structure to a trust.

The farm receives an annual rainfall of about 750-850 mm and the predominant soil type is sand. The farm is prone to summer dryness while movements in the water table can make winters very wet. Variable weather is partially managed by strategic use of the sand dunes and the sand flats. Soil tests are taken every two to three years from six 'marker' paddocks. Olsen P levels (1995) for the farm average 26 with data showing a steady increase in soil fertility during the period 1982 to 1995. Soil pH levels are about six. The farm nutrient audit shows that adequate nutrients are being applied based on production (Table 16). Pasture renovation occurs regularly in the autumn, however maintaining pasture species on the sand ridges can be difficult. Most of the conserved supplement is harvested from the 28 ha run-off block.

Table 16 Soil Nutrient Audit for Case Farm One.

	Nutrients (kg/ha)			
	N	P	K	S
Nutrients Applied	0	31.5	45	45
Nutrients removed (based on 29,714 [13]kg MF) [14]	40-80	28	40	36

[13] 29,714kg MF represents 52,000kg MS, which is the average production for the four years analysed.

[14] Nutrients removed based on N-P-K-S of (0-7-10-9) per kg MF/ha produced.

Difference	**3.5**	**5.0**	**9.0**

Once dried off, cows are moved to the 28 ha run-off and remain there until the start of calving where they receive a ration of 50% grass and 50% silage. Drying off is prolonged as far into May as possible with younger and thinner cows being dried off earlier if necessary. Young stock are transported to the 80 ha run-off block at weaning and remain there until just prior to calving when they join the dry cows on the 28 ha run-off.

A beef herd is managed on the run-off property for the purpose of pasture management. Weaner cattle are sourced from the dairy farm and sold at 24-30 months of age. The beef herd size is around 90 head and comprises approximately 30 head in each stock class i.e. weaners, 1 year olds and 2 year olds.

4.1.2 Monitoring and Management Tools:

Pasture growth is monitored and assessed visually through twice-weekly bike rides around the farm. The farmer owns a plate meter and uses it occasionally to check his estimates. The farmer is self-trained in pasture assessment and uses a consultant to confirm and fine tune both pasture monitoring and management. Feed budgets are prepared between the farmer and the consultant. The period from March to October is focused on as this is considered to be the most critical time for setting up the new season.

Book keeping is done using Concepts Cash Manager® on a monthly basis and GST is self prepared. Budgets are prepared and updated every 2-3 months. Investment budgets are also constructed when appropriate for example for fixed asset purchases. Banking is done through a direct link. DairyWin® is used to analyse herd test data. The farmer has also purchased the Endeavour® software package but has not yet utilised it.

A consultant is employed to act as a sounding board and provide a second opinion on management decisions. The accountant is used for tax purposes and advises on business structures. The bank manager comes out to the farm once a year but attends the local discussion group regularly. A good relationship exists between the farmer and the bank manager.

Information is gained through regular attendance of the local discussion group, the consultant's visits and attending courses, mainly on farming skills.

4.1.3 Mission Statement and Strategic Intent:

The researcher, from information provided in the mission statement worksheet, developed the mission statement and strategic intent.

4.1.3.1 Mission Statement:

"To operate a productive farm that is able to support high living standards by increasing production of high quality milk. To have financial security and enjoyment in our lives and have the freedom to share our time with the community, while all the time keeping our strong family relationship."

4.1.3.2 Strategic Intent:

Achieve financial success through increasing production of high quality milk production.

Achieve a rate of business growth that allows for:

a) A high quality lifestyle to be supported.

b) To fund retirement and travel activities.

c) A viable farming unit for either succession or sale.

Achieve and maintain a country lifestyle, encouraging health and happiness, self-motivation and personal growth and development for all members of the family.

4.1.4 Business Analysis:

Production has increased by 3.5% over the six years of analysis (Table 17). The farming system is subject to seasonal variation with the pasture silage and hay being the only supplement available to the herd. Cow numbers increased from 150 to 200 cows over two years however per cow production fell substantially at the higher stocking rate so that the increase in total production was not that great.

Table 17 Production analysis for Case Farm One.

Production Analysis	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total Production (kg MS)	45,593	49,242	52,173	50,269	51,819	54,018
% change (between years)		8.00%	5.95%	-3.65%	3.08%	4.24%
Cow Numbers	150	163	200	200	200	200
Per cow production	304	302	261	251	259	270
Per hectare production	608	657	696	670	691	720
Avg. price per kg MS	$3.31	$3.29	$3.37	$3.65	$3.29	$3.23
% change (between years)		-0.56%	2.44%	8.41%	-9.83%	-1.91%

Total assets increased in the 1993-94 year through the purchase of a run-off block. However, since the purchase the run-off block the asset value has declined (Table 18). The level of equity has declined from a peak of 83% in 1992-93 down to 73% in 1994-95. It has remained stable since the purchase of the run-off block. Net worth has grown at an average level of 0.13% per year indicating that little change is occurring.

Table 18 Solvency Analysis for Case Farm One.

Solvency	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total assets	$1,319,493	$1,580,304	$1,546,060	$1,557,304	$1,518,679	$1,493,798
Debt:Equity (gearing)	20%	35%	37%	36%	38%	35%
Net worth	$1,098,430	$1,168,438	$1,125,970	$1,142,090	$1,102,906	$1,109,142
Equity	83%	74%	73%	73%	73%	74%
Equity Growth		5.99%	-3.77%	1.41%	-3.55%	0.56%
Net Indebtedness	$182,779	$388,226	$387,685	$379,475	$379,623	$349,961
Change in indebtedness[15]	-$3,263	-$205,447	$541	$8,210	-$148	$29,662
Debt Servicing:GFI	13.04%	12.38%	22.66%	23.93%	26.00%	22.46%
Debt Servicing:GFI (inclu P*)	13.04%	12.38%	27.93%	23.93%	26.53%	31.62%

* P = principal repayments

The change in net indebtedness shows that the level of core debt increased with the purchase of the run-off block in 1995 and has since declined. In the 1997-98 year net indebtedness was reduced by $29,662.

[15] Negative values represent an increase in the level of indebtedness and positive figures are reductions in the level of indebtedness.

Debt servicing was steady at about 12.7% until 1993-94 but increased to about 24% with the additional borrowings in 1994-95. The current level of debt servicing is high and may restrict further development and expansion.

GFI exhibits a variation of about $40,000 however there is no strong pattern to this variation (Table 19). Perhaps climatic conditions could contribute to the variability although regression analysis suggests an increasing trend however (R^2 = 0.313). Cash farm expenses exhibit a variation of about $30,000 and the variation almost mirrors the pattern variation in GFI. Regression analysis suggests a declining trend (R^2 =0.252). The ROE averaged 3.8% and throughout the six years has been relatively constant (R^2=0.003).

Table 19 Profitability analysis for Case Farm One.

Profitability	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Gross Farm Income	$190,704	$212,951	$222,558	$227,367	$213,946	$215,594
Cash Farm Expenses	$104,576	$114,558	$117,910	$121,994	$99,323	$89,792
Cash Farm Expenses % GFI	54.84%	53.80%	52.98%	53.66%	46.42%	41.65%
Net Income	$53,252	$46,648	$27,424	$36,897	$36,367	$54,478
Return on Equity	4.85%	3.99%	2.44%	3.23%	3.30%	4.91%
EFS	$46,058	$28,617	$26,056	$45,271	$39,540	$54,956
Return on Assets	3.49%	1.81%	1.69%	2.91%	2.60%	3.68%
Operating Profit Margin	24%	15%	13%	21%	19%	25%
NOPAT	$34,344	$21,339	$19,429	$33,758	$29,484	$40,979
Capital turnover ratio	14.45%	13.48%	14.40%	14.60%	14.09%	14.43%

The EFS was substantially greater in 1992-93 than the following two years before starting to slow (R^2=0.217) (Figure 18). The ROA is low (1.81 – 3.68%) and dropped substantially with the purchase of the run-off block (Table 19). In subsequent years, the ROA improved to reach 3.65% in 1997-98. The average operating profit margin is low at 19.4%, which is a reflection of the low level of EFS compared to the level of GFI. The operating profit margin has increased from the time of purchase of the run-off block and is now back at the initial level. This low operating profit margin may affect the business' sustainability.

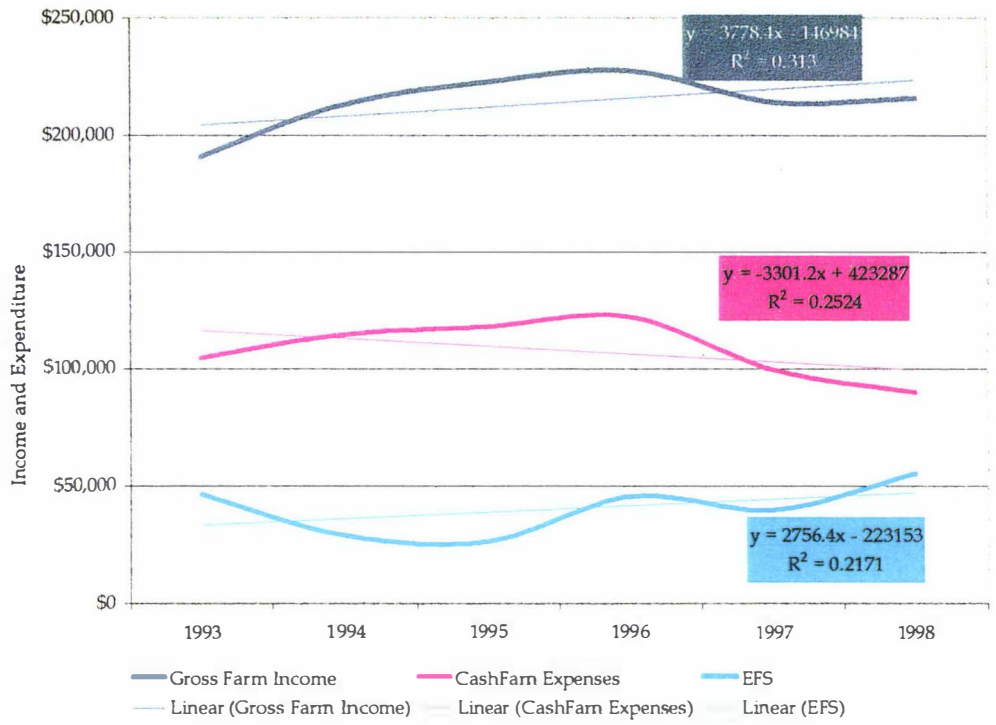

Figure 18 Income and Expenditure Trends for Case Farm One.

Capital turnover ratio averaged 14.2% (Table 19). This ratio is very consistent, however it is quite a low level of capital utilisation suggesting that insufficient income is being generated from the assets. It is interesting to note that the level of utilisation has not altered noticeably with the purchase of the run-off block.

The cost of debt (interest and rent) for this business is reasonably high and is exhibiting an increasing trend (Table 20). The cost of equity while much lower than the cost of debt, is increasing at a much greater rate, as can be seen in Figure 19. The overall effect on the cost of capital is a steady increase of about $15,500 per year ($R^2$=0.956). The cost of capital averaged 2.65% over the study period but was at 5.47% in 1997-98.

The Value Created metric indicates that there has been a cumulative divestment in the business of $64,500. Reinvestment was only possible in the first year of the analysis, while the remaining five years demonstrate that the business is not generating sufficient funds to cover both the operating and funding costs. The declining Net Present Value metric reinforces the information provided by the value created metric.

Table 20 Cost of Capital analysis for Case Farm One.

Growth	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Cost of Debt	$18,541	$19,654	$37,603	$40,575	$41,473	$36,105
Cost of Debt (%)	8.39%	4.77%	8.95%	9.77%	9.97%	9.39%
Cost of Equity	-$23,098	$2,036	$3,670	$6,861	$14,838	$45,617
Cost of Equity (%)	-2.10%	0.17%	0.33%	0.60%	1.35%	4.11%
Cost of Capital	-$4,557	$21,690	$41,273	$47,436	$56,311	$81,722
Cost of Capital (%)	-0.35%	1.37%	2.67%	3.05%	3.71%	5.47%
Value Created	$38,902	-$351	-$21,844	-$13,679	-$26,827	-$40,743
Net Present Value	∞	$1,554,743	$727,810	$1,108,238	$795,169	$749,064

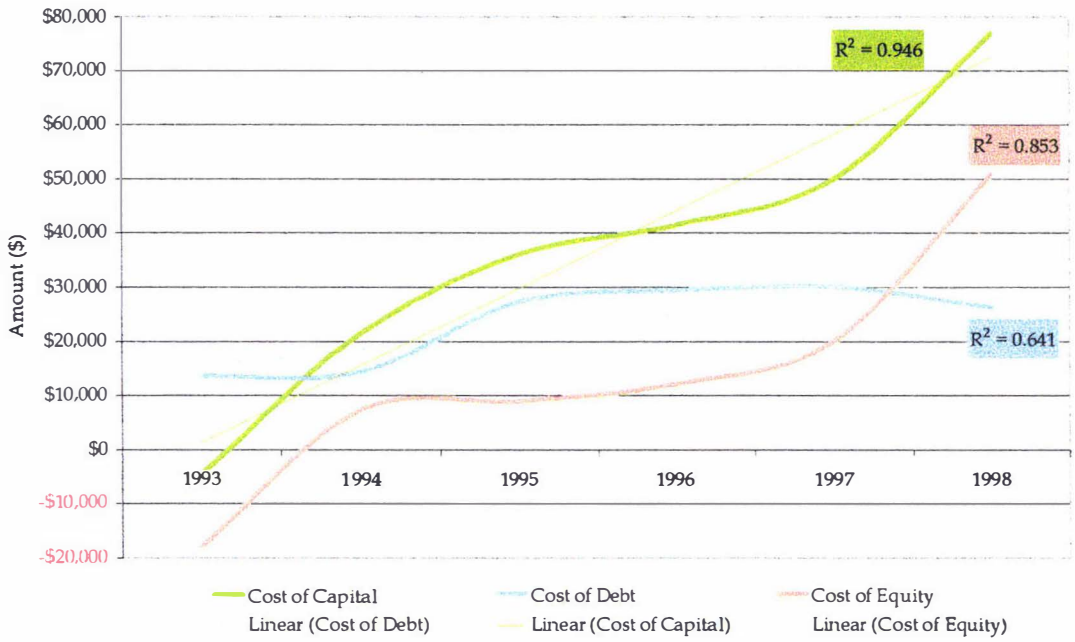

Figure 19Cost of Capital Analysis for Case Farm One.

4.1.5 Summary:

This business has reasonable equity but current debt servicing (interest and rent) is currently over 20% of GFI. Increased borrowings would therefore have to be assessed with care. The operating efficiency of the business is low and this is a major contributing factor to the business' inability to reinvest or create capital appreciation. In other words the NOPAT is insufficient to meet the funding needs of the business. The cost of equity is increasing, putting at risk the ability to achieve the goals identified by the family.

4.2 Case Study Farm Two:

4.2.1 Introduction:

Case study farm two is a 79 ha (72 ha effective) seasonal supply dairy farm including 4ha of river accretion land. It is supported by a 13 ha run-off block. The farm purchased in 1992 and the herd size has increased 140 cows to 170 cows. The average annual rainfall for the area is approximately 1,440 mm (60 inches). The farm is well subdivided and has race access to all except a couple of back paddocks. The water supply is adequate for the current stock numbers.

The farm is operated as a partnership between the farmer and his father. A discretionary trust was established during 1998-99 with assets from the partnership. The farmer also established a new partnership with his wife. The land will now be leased from the trust. The farmer is recently married with his wife continuing to work off farm. At present, there are no children.

The milking herd remains on the farm all year while yearling heifers are moved to the run-off block. Supplements are not purchased or fed on the farm as in spring it is usually too wet, nor are supplements purchased. The farm operates on a policy of low inputs. A stocking rate of 2.6 cows/ha wintered is maintained to minimise the affects of summer dryness and the need for supplements. The herd has a spread calving pattern which is considered beneficial as herd feed intake is better matched to pasture growth over the spring-early summer period. In early summer pastures are topped and culling occurs post-Christmas.

The wintering policy on the farm is to continue rotational grazing of the herd. When required, a sacrifice paddock is used to minimise pasture damage from pugging. However, the farmer considers that this may be creating a mastitis problem as somatic cell counts have been rising over the last two seasons. To rectify this problem, more sacrifice areas will be used over the winter.

Soil test are taken every three years and fertility levels at 1995 are shown in Table 21

Table 21 Soil test data (1995) and Nutrient Audit for Case Farm Two.

Paddock	pH	P	K	Ca	Mg

Top	5.6	20	6	8	16
Middle	5.3	18	7	7	25
River	5.9	17	6	6	22
Optimum	5.8-6.2	20-30	7-10	4-10	8-10
Nutrients Applied per ha	N	P	K	S	
10% Potash super (0-8-6-10) # @ 475kg/ha	0	38.0	28.5	47.5	
30% Potash super (0-6-15-8) @ 475kg/ha	0	28.5	71.3	38.0	
3 tonne Urea (46-0-0-0)	21	0	0	0	
TOTAL NUTRIENTS APPLIED	21	66.5	99.8	85.5	
Nutrients removed per ha					
27,788kg * MF x 1.5 = 41682kg fert at (0-7-10-9)	40	45	65	58	
Nutrient surplus (deficit)	-19	21.5	34.8	27.5	

Assumption re 10% potassic analysis

* Average production level

A nutrient audit shows that nutrients are applied at a level greater than the removal rate therefore an increase soil fertility levels would be expected, however, there are no current soil tests to confirm this. Pastures were in a run down state at purchase and there has been no pasture renewal. Pasture improvement is done through the "hoof and tooth" method and by increasing soil fertility levels.

4.2.2 Monitoring and Management Tools:

No formal feed budgeting is done on the farm and feed is allocated according to the longest pasture and set grazing rotations, i.e. the cows are allocated a paddock for the day. Visual assessment of pre and post grazing levels occurs. Cow intake and pasture quantity and growth rates are not calculated.

The financial records are currently under the control of the farmer's father and a manual cash-book is kept. Annual budgets are prepared but are not updated or adjusted formally, though management may be altered because of cash flow. Bimonthly GST returns are currently prepared by the farmer's father. The farmer will take over the financial management from the 1999-2000 season and bookkeeping will be computerised.

The farm computer is used regularly by the farmer for the Internet and email communication but it is not currently used for farm records. The farm has it own web page.

The farmer belongs to the local LIC discussion group and estimates that he attends about two thirds of the meetings. The local fertiliser representative is consulted about fertilizer requirements and recommendations.

4.2.3 Mission Statement and Strategic Intent:

The researcher developed the mission statement and strategic intent from information collect in the Mission Statement worksheet.

4.2.3.1 Mission Statement:

"To operate our farming business in a manner that allows us to comfortably provide for ourselves, our children and our parents while also allowing growth in on- and off-farm investments, and providing an enjoyable work environment. We will contribute to the community through involvement in community based groups and activities."

4.2.3.2 Statement of Strategic Intent:

To operate the farm business in a manner that:

1. Allows expansion
2. Supports two families in a comfortable lifestyle.
3. Provide sufficient funds to support a growing family.

4.2.4 Goals:

The goals of the farm couple are to start a family in the immediate future and to expand the size of the farm by purchasing a neighbouring property within the next few years. This would enable the farm to increase to a 250-300 cow unit, which they consider to be a viable unit. The Strategic Intent is poorly defined other than to provide a good lifestyle for the two farming families involved in the business

4.2.5 Business Analysis:

The business analysis from the last six seasons is summarised in Table 22. This shows an average annual rate of increase in production of 5% over the six years. Herd size increased by 3% over the same time.

Table 22 Production Analysis for Case Farm Two.

Production Analysis	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total Production (kg MS)	42,995	46,787	49,330	48,931	50,150	53,540
% change		8.82%	5.44%	-0.81%	2.49%	6.76%
Cow numbers	140	150	158	162	165	166
Per cow production	307	312	312	302	304	323
Per hectare production	693	755	796	759	778	830
Avg. price per kg MS	$3.22	$3.44	$3.23	$3.74	$3.21	$3.16
% change		6.90%	-6.15%	15.73%	-14.13%	-1.77%

The farm business' average equity over the six years has averaged 68% (Table 23). This is a stable and relatively safe position and may allow some expansion to occur provided other criteria can be met. Equity growth is increasing (R^2 =0.260).

Table 23 Solvency Analysis for Case Farm Two.

Solvency	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Debt:Equity (leverage)	55%	39%	50%	48%	45%	40%
Net worth (Owner's Equity)	$700,724	$755,753	$781,209	$800,447	$816,781	$890,441
Equity	65%	72%	67%	68%	69%	72%
Equity Growth rate		7.28%	3.26%	2.40%	2.00%	8.27%
Net Indebtedness	$318,397	$276,801	$386,716	$358,971	$324,963	$251,145
Change in Indebtedness	-$132,389	$41,596	-$109,915	$27,745	$34,008	$73,818
Debt Servicing:GFI	29.22%	9.43%	16.25%	21.16%	22.07%	19.15%
Debt Servicing:GFI (inclu P)	29.22%	63.14%	16.25%	32.24%	31.61%	35.80%

The rate of change in equity was used to calculate the business contribution to the owner's net worth. Over the six year period of the analysis the farm business yielded a return of 4.68% to the owners. While this is a strong result, there is confusion as to where the introduced funds have come from. If these fund are a result of selling another asset then the adjusted growth in net worth would be 0.48%.

The level of net indebtedness shows a steady reduction from 1994-95 onwards (Table 23). Over the six year period $208,579 was introduced into the business by the shareholders, however the change in net worth was only $190,000 suggesting that

some of these funds were used to support the operational side of the business. External funds are taken into account in the cost of equity and therefore capital.

Debt servicing (interest and rent payments) represent on average 19.5% of GFI. This is high by industry standards but is manageable unless extra capital for expansion was required.

Farm cash operating expenses represent approximately 42% of the GFI (Table 24). The large increase in cash farm expenses in the 1993-94 year is attributable to about $18,700 spent on shed repairs and maintenance. The low expenditure in 1994-95 is due to a reduction in fertilizer spending while the increases in cash farm costs from 1995-96 onwards are mostly due to spending on fertilizer and hay making. The current level of cash farm expenses as a proportion of GFI is currently below the industry recommendation of 50%; fluctuations in income obviously contribute to variations as well.

Table 24 Profitability analysis for Case Farm Two.

Profitability	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Gross Farm Income	$137,010	$169,543	$177,230	$196,668	$161,563	$178,400
Cash Farm Expenses	$63,385	$82,356	$57,864	$70,405	$73,429	$75,915
Cash Farm Expenses % GFI	46.26%	48.58%	32.65%	35.80%	45.45%	42.55%
Net Income	$28,812	$61,832	$82,269	$71,910	$47,805	$67,621
Return on Equity	4.11%	8.18%	10.62%	8.98%	5.85%	7.59%
EFS	$43,842	$52,820	$86,077	$88,532	$58,463	$76,787
Return on Assets	4.04%	5.02%	7.37%	7.47%	4.93%	6.17%
Operating Profit Margin	32%	31%	49%	45%	36%	43%
NOPAT	$33,631	$40,518	$66,030	$67,913	$44,847	$58,903
Capital turnover ratio	12.62%	16.11%	15.09%	16.59%	13.63%	14.33%

Return on owner's equity averaged 7.6% over the six years. Return on assets averaged 5.8% therefore on average every dollar invested is returning 5.8 cents. The ROA reflects changes in the EFS and in the level of assets.

The average EFS was $67,750 but ranges from $43,842 in 1992-93 to a peak of $88,532 in 1995-96. The high EFS in this year and the previous year appear to be because of increased gross farm income combined with lower farm expenditure (Figure 20). The operating profit margin for the farm is 39% and like EFS has a large range of 31% (1993-94) to 49% (1994-95). Capital turnover ratio averaged 14.7% (Table 24). This is

a low capital efficiency rate and suggests that the income being generated by them could be substantially improved.

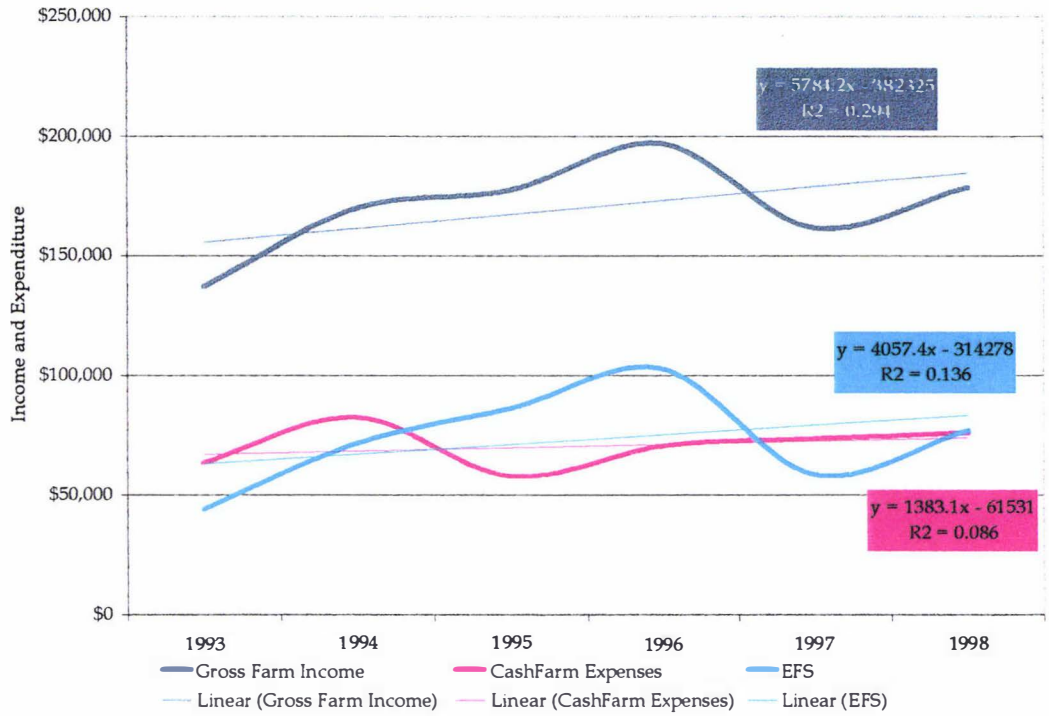

Figure 20 Income and Expenditure Trends for Case Farm Two.

The cost of capital for the farm business averaged 4% however it the average cost of debt was 6.58% while the average cost of equity was only 1.01% (Table 25). The low cost of capital has been achieved through the addition $208,579 identified only as introduced funds. This has created the very low cost of capital despite drawings being substantially greater than the unpaid management and labour allowance. The effect of the cost of equity on the cost of capital is clearly demonstrated in Figure 21. The variability in the cost of equity is reflected in the cost of capital suggesting that, on this farm, there is a high correlation between these two components. The variability also prevents trend predictions as demonstrated by the R^2 coefficients.

Table 25 Cost of Capital Analysis for Case Farm Two.

Growth	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Cost of Debt	$30,707	$12,264	$22,099	$31,928	$27,353	$26,209
Cost of Debt (%)	7.97%	4.13%	5.62%	8.30%	7.43%	7.40%
Cost of Equity	-$34,402	$17,465	$5,774	$20,228	$5,946	-$11,386
Cost of Equity (%)	-4.91%	2.31%	0.74%	2.53%	2.81%	-1.28%
Cost of Capital	-$3,695	$29,729	$27,872	$52,156	$33,299	$14,822
Cost of Capital (%)	-0.34%	2.82%	2.37%	4.40%	2.81%	1.19%
Value Created	$37,327	$25,134	$38,158	$26,497	$11,548	$44,081
Net Present Value	∞	$1,942,143	$2,781,952	$1,787,333	$1,596,145	$4,946,701

Value created represents reinvestment, capital appreciation or depreciation, through farm management practices. For the six years of historical analysis, the farm asset base appreciated by $182,744 (Figure 21). This has only been achieved through the large amount of introduced funds and their influence on the cost of capital.

Net present value of this business suggests that the productive value is consistently higher than the capital value of the assets. Again this largely due to the very low cost of equity and its effect on the cost of capital.

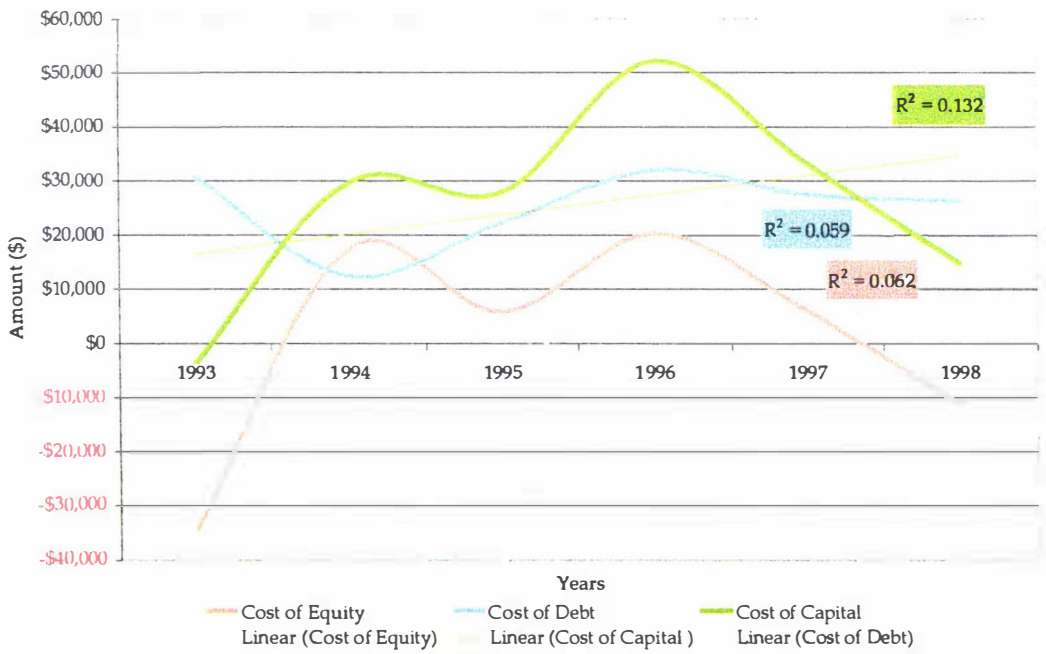

Figure 21 Cost of Capital Trends for Case Farm Two

4.2.6 Summary:

This farm business has a "low input policy" i.e. no supplement feeding, with the aim of running a low cost system on the basis of farm working expenses as a percentage of gross farm income. However, the ratio of farm cash costs to GFI does not differ significantly from farms that do feed supplements. The decision not to feed supplements is reflected by the low per cow production.

A combination of the equity level and the debt servicing level is likely to severely hinder farm expansion unless off-farm funds are introduced. The high level of introduced funds provides an artificial picture of the business' success and its reinvestment rate.

At present, the business is not able to support the goal of expansion and without outside funds being introduced, it may struggle to meet the cash cost of funding as this would increase significantly.

4.3 Case study farm three:

4.3.1 Introduction:

Case farm three is a 65 ha (62 effective) seasonal supply dairy farm currently supporting a milking herd of 240 cows. The husband's parents purchased the farm in 1966 however, the husband had no interest in working the farm and took up off-farm employment. In 1978 the husband and wife, also from a dairying background, moved onto the farm as lower order sharemilkers progressing to 50% sharemilkers. In 1989, the farm was purchased from the parents. The farm business is operated as a 60:40 partnership. The farming couple have three teenage children. Currently there is no succession plan in place as none of children are interested in farming. The whole family is actively involved in many community activities and organisations.

A 40 ha run-off block was purchased in the 1995-96 season and during the 1996-97 season 41 ha adjoining the dairy farm was leased. There is the potential to lease an additional eight hectares. Expectations are that the lease block will be able to support production at 80% of the home farm's capability which equates to approximately 720 kg MS/ha.

The soils of the dairy farm are predominantly silt loam while the run-off block is sand. The run-off block is used to graze the dry cows for about six weeks over the winter. On their return to the dairy farm the heifers (nine months old) are moved to the block. The run-off is not able to support many stock over the summer if a feed cover is to be built in preparation for the dry cows.

The farm currently employs a full-time labour unit. He has been on the farm for 11 years. However, he is leaving at the end of the season to go sharemilking. This means the farming couple will return to the dairy for daily milkings, as they have indicated that they will not rush to re-employ someone.

Turnips are grown as a summer forage crop and silage and hay are used on both the milking platform and at the run-off. A calving pad eliminates some of the winter-wet problems; cows are often stood off in the yard to protect pastures from pugging damage. The farmer estimates that the effects of pugging can effect pasture

production for the following three seasons. Cows calve either on the calving pad or at the run-off block.

4.3.2 Monitoring and Management Tools:

Formal feed budgets are prepared for critical periods of the year. The farmer relies mostly on visual assessment to assess pasture while the farm worker regularly used a plate meter for this purpose. A farm consultant is also used to fine-tune pasture management. The farmer uses 'gut feel' and visual assessment to make pasture allocation decisions. While the farm worker was employed, decision-making tended to be done formally. Now it is much more informal and based on experience. Some herd testing occurs, mainly for gathering somatic cell count data for culling purposes.

There is no formal financial monitoring. The accountant prepares GST every two months and prepares accounts. However, with no financial preparation done on the farm the accountant often allocates expenses incorrectly. There is no farm computer. The farm consultant is also used for reinforcing practices, to act as a sounding board and to provide motivation. The local bank manager prepares cash flows and budgets on a quarterly basis.

The farmer considers participation at the local discussion group an important information source as well as providing a basis for comparing the farm's performance.

4.3.3 Mission Statement and Strategic Intent:

The researcher developed the mission statement and strategic intent from information collect in the Mission Statement worksheet.

4.3.3.1 Mission Statement:

"To operate a profitable business that is able to support our desired standard of lifestyle through the production of quality dairy produce. To have financial security, an enjoyable work environment and the freedom to share our time with the community while all the time maintaining a supportive environment for our family and staff."

4.3.3.2 Statement of Strategic Intent:

To operate a profitable business that will continue to provide an enjoyable work environment.

Ensure a rate of growth that allows for:

- Business expansion to maintain the business' viability.
- The maintenance of lifestyle.
- Employment of a sharemilker while not jeopardising lifestyle.

Provide an encouraging and learning environment for young entrants into the dairy industry with the aim of developing their knowledge and skills so that they are able to progress in the industry.

Maintain a rural lifestyle that allows for personal growth and development.

4.3.4 Goals:

Identified goals are:

- To own the lease block outright within the next five years. This may require the run-off block to be sold. Ownership of the lease block will make the farm a viable unit for a sharemilker.
- To employ either staff or a sharemilker so that the farmer does not have to milk every day. This is to happen within the next five years but only if debt and debt servicing is substantially reduced.
- To maintain the current standard of living. A good lifestyle is enjoyed off-farm.
- Be in a position to have sufficient funds to support retirement and move away from the district.

4.3.5 Business Analysis:

Case farm three's per hectare production is very high by district standards (Table 26). The reduction in the 1997-98 year was due to the addition of lease land to the milking

platform. The leased land has traditionally been a beef block with minimal fertiliser inputs and infrastructure.

Table 26 Production Analysis for Case Farm Three.

Production Analysis	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total Production (kg MS)	58,639	60,450	59,934	56,300	66,509	68,156
% change		3.09%	-0.85%	-6.06%	18.13%	2.48%
Cow numbers	180	180	180	180	180	206
Per cow production	326	336	333	313	369	331
Per hectare production	946	975	967	908	950	852
Avg. price per kg MS	$3.53	$3.34	$3.37	$3.68	$3.34	$3.17
% change		-5.34%	0.89%	9.41%	-9.34%	-5.17%

The land values used in this analysis are based on what the farmer considered to be market rates however they differ substantially from the government valuations which are about $400,000 less than the supposed market rates. This has major impacts on the solvency ratios and the cost of capital. In using the government valuations, equity averages 40% (31%-50%), and the cost of capital is about 2% greater, and ROA averages 2.5% higher.

The equity levels of this farm business have declined substantially since the purchase of a run-off block in the 1995-96 year from about 63% down to 49% (Table 27). The low level of equity is also demonstrated in the gearing ratio, which has averaged 103% over the last three years, therefore, liabilities are greater than the level of equity or net worth. The net worth of the business is declining at an average rate of 1.92% per year.

Table 27 Sovency Analysis for Case Farm Three.

Solvency	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total assets	$1,274,790	$1,271,845	$1,316,796	$1,512,685	$1,518,888	$1,540,101
Debt:Equity (gearing)	54%	59%	62%	105%	99%	104%

Net worth	$825,211	$799,591	$814,444	$737,510	$761,955	$754,382
Equity	65%	63%	62%	49%	50%	49%
Equity Growth		-3.20%	1.82%	-10.43%	3.21%	-1.00%
Net Indebtedness	$437,377	$471,251	$484,578	$756,329	$722,470	$758,852
Change in indebtedness	-$51,601	-$33,874	-$13,327	-$271,751	$33,859	-$36,382
Debt Servicing:GFI	16.84%	17.03%	11.76%	29.80%	29.46%	33.00%
Debt Servicing:GFI (incl. P)	18.15%	17.03%	18.73%	29.80%	34.32%	43.91%

The level of net indebtedness in all years increases with the exception of 1996-97 but the increase in the following year brings the level back to the 1995-96 year (Table 27). The level of debt servicing (interest and rent) is very high and has increased consistently (R^2=0.683) and must be reduced because it is starting to interfere with the funding of operations.

Gross farm income has varied due to changes in production, milk price and changes in inventory (Table 28). Cash farm expenses have remained relatively stable until the purchase of the run off block which shows an increase through establishment costs and then a decline due to grazing fees being replaced by interest payments. Cash farm expenses averaged 48% of GFI. Figure 22 shows the variability in income, expenses and EFS over the analysis period.

Table 28 Profitability Analysis for Case Farm Three.

Profitability	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Gross Farm Income	$238,924	$218,947	$228,628	$219,371	$248,470	$240,742
Cash Farm Expenses	$114,046	$113,960	$119,107	$130,921	$84,423	$104,500
Cash Farm Expenses % GFI	47.73%	52.05%	52.10%	59.68%	33.98%	43.41%
Depreciation	$4,641	$6,973	$7,971	$6,366	$7,962	$6,672
Net Income	$80,586	$67,505	$74,660	$17,285	$78,467	$61,871
Return on Equity	6.74%	5.32%	6.10%	-1.05%	7.02%	4.79%
EFS	$95,823	$79,793	$76,550	$57,653	$133,356	$126,996
Return on Assets	7.52%	6.27%	5.81%	3.81%	8.78%	8.25%
Operating Profit Margin	40%	36%	33%	26%	54%	53%
NOPAT	$65,918	$54,891	$52,660	$39,661	$91,738	$87,362
Capital turnover ratio	18.74%	17.21%	17.36%	14.50%	16.36%	15.63%

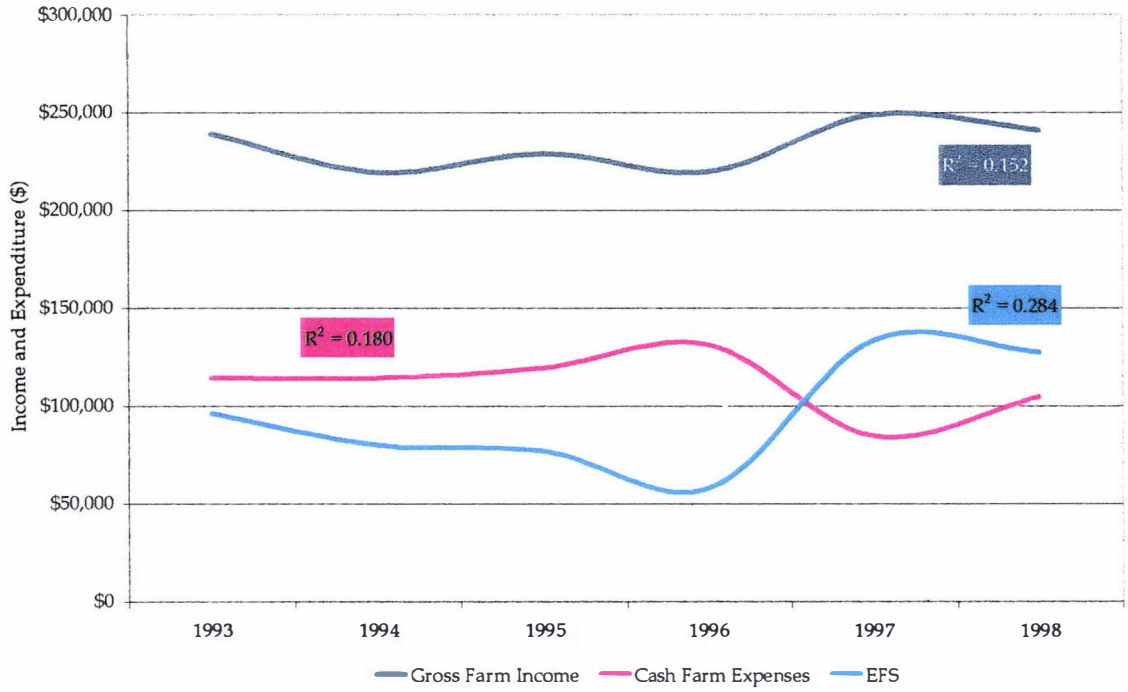

Figure 22 Income and Expenditure trends for Case Farm Three.

ROE averaged 4.82% though the drop in 1995-96 is due to a drop in NFI caused by increased farm cash costs. A $40,000 increase in interest also affected the reduced NFI in this year. The EFS varies substantially with large levels being seen in the last two years of the analysis, which is mostly due to increased GFI. There is no significant trend (Figure 22).

The ROA averaged 6.7% with the variation closely following the pattern of the EFS (Table 28). Using market rates for the land, the ROA is very high, which suggests that the "market values" may be an acceptable figure to use. If the government valuations are used then the ROA averages 9.32% with the last two years returning 12 and 11% respectively. However, it is also important to note that with the exception of livestock, other assets represent a very small percentage of the total and that the majority of the machinery on the farm is old.

The operating profit margin averaged 40.5% with the first four years declining steadily and the last two years increasing to over 50% (Table 28). This increase is attributable to increased GFI and substantial reductions in the cash farm expenses. These levels of operating profit margin are good with the last two years being very high. The reduction in cash farm expenses however is not necessarily sustainable.

The capital turnover ratio is low and in general is declining (R^2=0.575) suggesting that the level of asset is not generating sufficient income compared to their assigned value (Table 28). The drop in the capital turnover ratio is attributable to the purchase of the run-off block which while increasing assets did not affect GFI.

The cost of equity for this business is relatively high and in several years is higher than the cost of debt (Table 29). The high cost of equity is largely due to high personal drawings, which exceeds the calculated allowance for unpaid labour and management. The cost of capital averaged 5.7% but again this varies (Figure 23).

Table 29 Cost of Capital Analysis for Case Farm Three.

Growth	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Cost of Debt	$27,680	$25,651	$18,498	$44,968	$54,957	$62,515
Cost of Debt (%)	6.16%	5.43%	3.68%	5.80%	7.26%	7.96%
Cost of Equity	$36,935	$46,574	$38,724	$39,059	$56,888	$21,608
Cost of Equity (%)	4.48%	5.82%	4.75%	5.30%	7.47%	2.86%
Cost of Capital	$64,614	$72,225	$57,222	$84,027	$111,845	$84,122
Cost of Capital (%)	5.07%	5.68%	4.35%	5.55%	7.36%	5.46%
Value Created	$1,304	-$17,334	-$4,562	-$44,366	-$20,107	$3,240
Net Present Value	$1,300,520	$966,595	$1,211,812	$713,987	$1,245,826	$1,599,427

The value created metric shows that there has been continual divestment in the farming business, totaling $81,825, because there are insufficient funds to provide for both the operating expenses and the funding expenses. This also suggests that required operating expenditure might be sacrificed to ensure that the cost of capital is met, which may adversely affect the income generating potential of the business.

The net present value shows that the productive value of the farm is consistently less than the assumed capital value. This occurs irrespective of the land valuation used, which suggests that the farm is not generating sufficient operating profit for the funding requirements. Therefore either the NOPAT must increase or the cost of capital must be reduced or preferably a combination of the two.

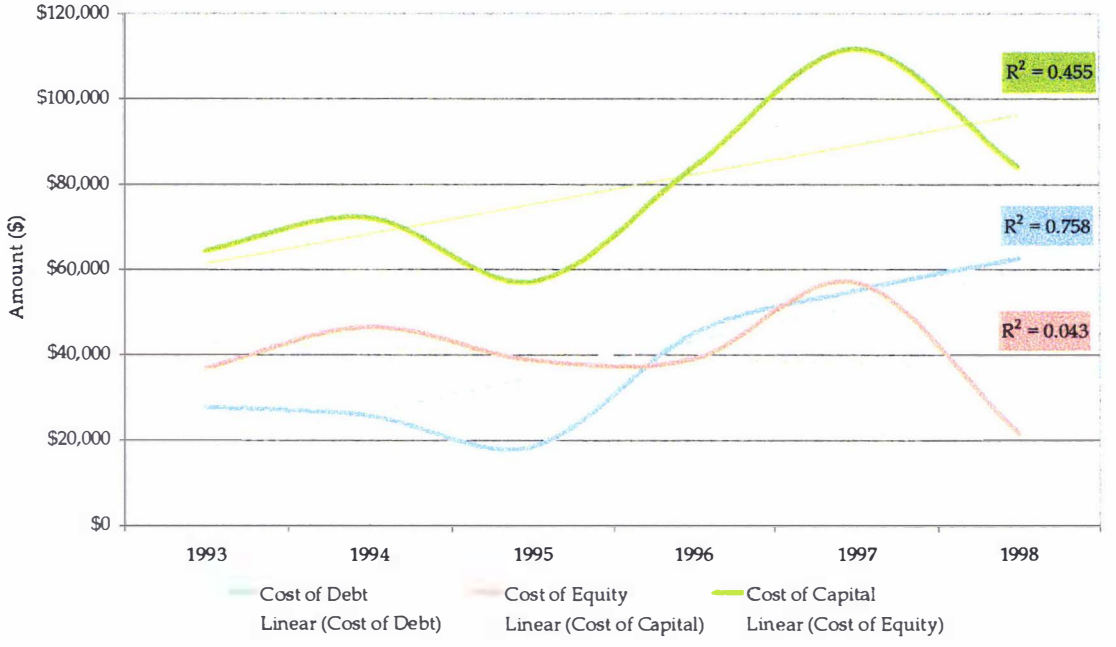

Figure 23 Cost of Capital Trends for Case Farm Three.

4.3.6 Summary:

This farming business is currently in a weak financial position. The level of equity and debt servicing will prevent the business from progressing unless funds are brought into the business from other sources, for example, the farmer's parents gift their loan and forgive the requirement for interest payments. The current situation is probably worse as the farm has gone onto interest only payments for the 1998-99 year and most likely for 1999-2000 also. The level of net worth is being eroded at about 2% per year, which makes most of the farm family's goals unattainable.

The operating profit margin is strong throughout the analysis and will improve further as wage payments cease upon the full-time worker leaving. This suggests a major imbalance between the operational and funding components of the business.

The purchase of the run-off block has not contributed to the overall health of the business: rather it has transferred costs from farm operations to farm ownership (funding costs).

4.4 Case Study Farm Four:

4.4.1 Introduction:

Case farm four is a 200ha seasonal supply dairy farm currently supporting a milking herd of 370 cows. The farm was purchased in a ballot in 1978. Additional land was purchased in 1982-83 (20ha) and again in 1997 (76ha). Land is leased for young stock and dry cows; the current lease expires at the end of this year and options are being investigated.

The farm was operated as a partnership between the husband and wife until the 1997-98 season when a trust was established. The trust purchased all land and improvements and the farming couple are 50% sharemilkers for the trust and have retained ownership of the livestock and machinery. The husband and wife still operate as a partnership. The farming couple has three adult children, one of whom works in agriculture.

The annual rainfall on the farm averages 600-720mm with the incidence of summer drought being quite high. The farm can also get very wet in early spring. Supplements are fed throughout the summer and autumn and the policy is to ensure there is a substantial supply available, though the farmer suggests that this may be excessive at times. Most of the silage is purchased and placed in pits on the home farm, as it is often too wet to make silage on the farm.

The farm has a large area of Fescue based pastures, which require attentive pasture management. If control is lost then cows will not graze it properly and milk production will suffer.

The herd is split into two mobs as the farm infrastructure was designed for about 200 cows. The farmer also finds it easier to manage the smaller mobs and has found managing the larger number of cows difficult yet challenging.

The farm employs a full-time married man, though his wife is not expected to work on the farm. A single man is also employed full-time. Permanent staff are preferred over contract milkers because of the production variability the farm experiences

(Figure 24). The husband works full time on the farm and is responsible for calf rearing and the wife milks most weekends and is available when required.

4.4.2 Monitoring and Management Tools:

The farm business is not computerised. Hand recorded production data exists from the 1973-74 season. This information is used to predict and compare the ten day milk yields for any time period at any time. Pastures are monitored by visual assessment of pre and post grazing levels and pasture allocated accordingly. Strip fencing is used quite extensively both to minimise wastage and to ensure that cows are fed their requirements. This is particularly important on the fescue and cocksfoot pastures.

The financial position of the business is monitored through weekly bank statements and an additional one on the 22nd of the month recording the milk cheque. Previously financial control was achieved through the chequebook but with the increasing level of automatic payments and multiple recipient accounts, this is no longer possible. Every two months accounts are sent to the accountant for GST calculations and a cash flow report is prepared and sent out to the farmer.

The main indicator of business success used is the bank balance. Equity ratios are of no interest as they represent an asset that is required for living and the expenditure occurs well in advance: "equity cannot be spent". Taxation accounts are used to identify trends but in general are considered to have minimal relevance as they are deemed to be historical information which cannot be used for planning.

A consultant will be employed for the coming season to help with grass management and a private discussion group is used for farm management activities with the main focus of the group being to train and involve staff. Business management is not discussed.

The major indicator of business success on the farm is considered to be the bank balance and the change between opening and closing balances for the year.

4.4.3 Mission Statement and Strategic Intent:

The researcher developed the mission statement and strategic intent from information collect in the Mission Statement worksheet.

4.4.3.1 Mission Statement:

" To operate a profitable and progressive business that will maintain our lifestyle and provide for our retirement while providing a income generating asset for our children."

4.4.3.2 Strategic Intent:

To operate a profitable business that is able to:

1. Provide a comfortable lifestyle
2. Provide for retirement.
3. Provide a working asset for the children.

While ensuring that the business is stable enough to take advantage of opportunities as they present themselves.

4.4.4 Goals:

The major goal of the farming couple was farm ownership and to pay off debt. Farm ownership has been achieved and the repayment of debt was almost complete until the purchase of additional land, which has eroded equity from 82% down to 51%.

Develop the farm so that it is self-sufficient and can be passed on to either both of the sons or be able to support a sharemilker. The trust setup allows a sharemilker to be placed on the farm at any time.

The farming couple does not wish to milk cows forever but have no time frame for stopping. They also want the freedom to come and go from the farm as they choose.

There is an interest in travelling but again no specific plans will be developed to ensure it happens i.e. no time frame and no savings programme etc.

4.4.5 Business analysis:

The average annual increase in production is 10.85% (Table 30). Increased production has been achieved mostly through improved per cow production though the 1993-94 and 1997-98 seasons saw increases in herd size. The production graph (Figure 24) shows that production is affected considerably by the summer/autumn period. Milk price has declined at an average annual rate of 2.58%.

Table 30 Production Analysis for Case Farm Four.

Production Analysis	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total Production (kg MS)	49,397	65,055	63,676	73,647	70,678	79,887
% change		31.70%	-2.12%	15.66%	-4.03%	13.03%
Peak Cows	210	240	240	240	240	340
Per cow production	235	271	265	307	294	235
Per hectare production	475	626	612	708	680	563
Avg. price per kg MS	$3.68	$3.30	$3.39	$3.59	$3.43	$3.20
% change		-10.30%	2.74%	5.91%	-4.45%	-6.79%

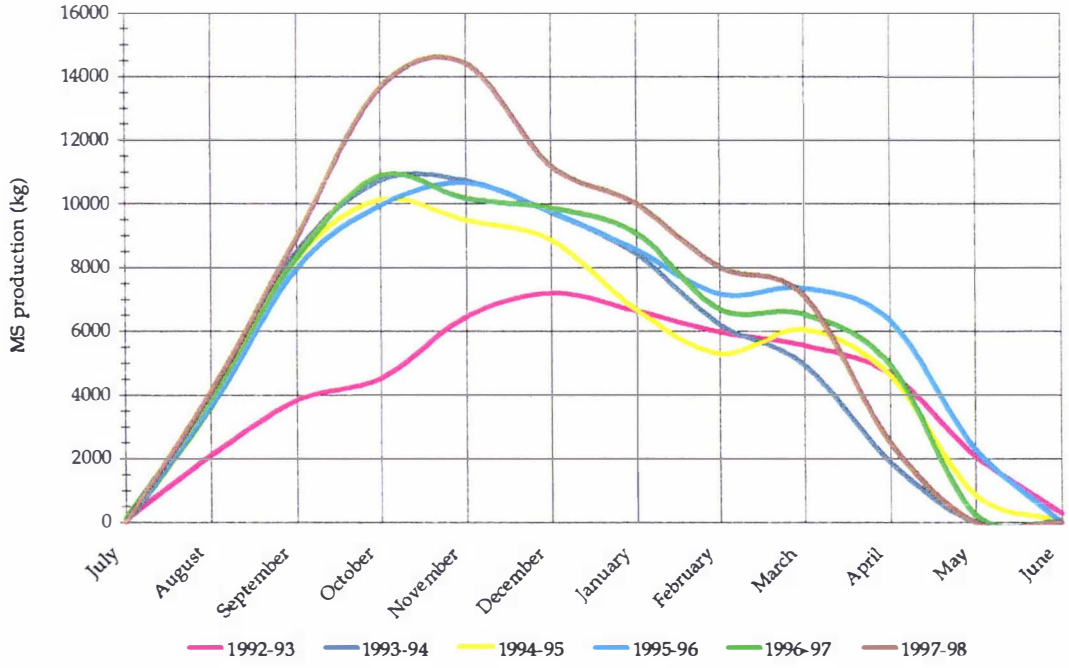

Figure 24 Milk Production Trends - Case Farm Four

Solvency levels for the farm business were as high as 90% however additional borrowings saw a decline to about 82% (Table 31). In the 1997-98 season the equity dropped substantially to 51% upon the purchase of additional land and increased

borrowings. These changes are presented in a dollar format as net worth or owner's equity. Net worth declined with an average annual rate of -0.89%.

Table 31 Solvency Analysis for Case Farm Four.

Solvency	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total assets	$1,276,584	$1,287,503	$1,310,100	$1,326,353	$1,340,973	$2,090,988
Debt:Equity (gearing)	16%	12%	22%	20%	23%	97%
Net worth	$1,102,405	$1,148,142	$1,070,472	$1,103,595	$1,094,566	$1,058,795
Equity	86%	89%	82%	83%	82%	51%
Net Indebtedness	$149,542	$95,545	$219,462	$176,250	$218,053	$1,008,700
Change in indebtedness [16]	-$526	$53,997	-$123,917	$43,212	-$41,803	-$790,647
Equity Growth		3.98%	-7.26%	3.00%	-0.82%	-3.38%
Debt Servicing:GFI	6.27%	17.95%	21.18%	13.70%	16.84%	23.14%
Debt Servicing:GFI (inclu P)	10.63%	19.15%	21.18%	17.74%	21.33%	23.14%

The level of net indebtedness reached a low point of $95,545 in 1993-94 but increased significantly in the following year (Table 31). The 1996-97 year shows the net indebtedness is at the same level of the 1994-95 year after an initial reduction. In 1997-98 net indebtedness increased to $1,008,700, reflecting the additional land purchase.

Debt servicing levels were very low in the first year of analysis but increased due to the addition of rented land (Table 31). The 1997-98 figure for debt servicing represents interest only as there was no rented land. The level of debt servicing, while manageable, is reasonably high and is also at a historic high.

The profitability ratios show that the cash operating expenses of the farm are consistently above 50% of GFI (Table 32). When combined with the level of debt servicing there is limited funds available for other business payments such as taxation, drawings and capital development.

[16] Negative values represent an increase in the level of net indebtedness while positive values represent reductions in the level of net indebtedness.

Table 32 Profitability Analysis for Case Farm Four.

Profitability	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Gross Farm Income	$243,911	$293,767	$256,705	$298,653	$285,577	$317,443
Cash Farm Expenses	$159,067	$147,374	$157,454	$166,970	$174,549	$208,736
Cash Farm Expenses % GFI	65%	50%	61%	56%	61%	66%
Net Income	$70,021	$85,050	$33,921	$81,828	$72,378	$9,456
Return on Equity	5.92%	6.93%	3.17%	7.41%	6.61%	0.89%
EFS	$55,326	$107,781	$58,288	$97,744	$98,470	$5642
Return on Assets	4.08%	7.88%	4.45%	7.37%	7.34%	2.70%
Operating Profit Margin	23%	37%	23%	33%	34%	18%
NOPAT	$38,974	$75,926	$41,061	$68,856	$69,367	$36,600
Capital turnover ratio	17.98%	21.48%	19.59%	22.52%	21.30%	15.18%

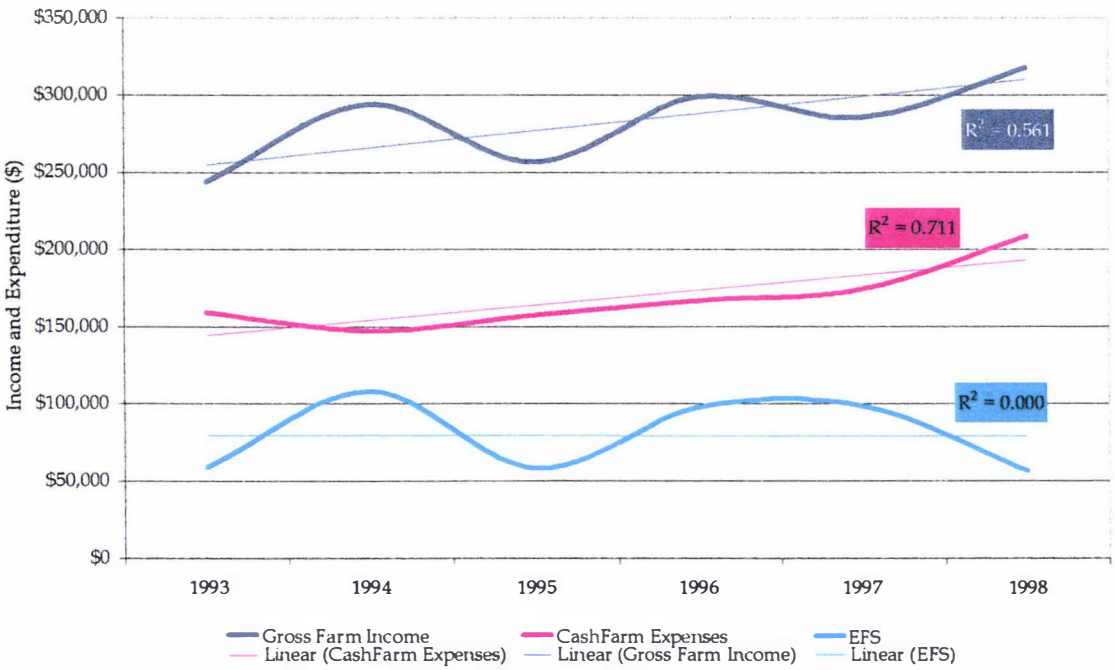

Figure 25 Income and Expenditure trends - Case study four.

Return on equity has fluctuated throughout the period of analysis but the 1997-98 ROE of 0.89% is of concern (Table 32). This may be a reflection of the land purchase with extra expenditure occurring; possibly capital developments, and minimal income being generated by the additional assets.

The level of operating profit or EFS has fluctuated considerably over time. Regression analysis is unable to predict a trend (R^2=0.000). This is a direct result of increasing costs and may also be due to the seasonal variation that the farm is

subjected to. The same variation is seen in the operating profit margin, which averaged 27.8%. This is a relatively low level. Return on assets for the business has also fluctuated mainly due to the level of EFS changing, as changes in asset values have been minor with the exception of the 1997-98 year.

The capital efficiency ratio averaged 19.7% (Table 32). This is a moderate level of asset utilization. The low level seen in the 1997-98 is due to the increase in assets, however, they are not yet fully productive. Therefore, the new asset is generating minimal income at present.

The percentage cost of debt is high between the years of 1993-94 to 1996-97 (Table 33). This is caused through the low liabilities and the inclusion of rent payments in the calculations. Based on a dollar value the level has demonstrated an increasing trend (R^2=0.542). The cost of equity shows quite a substantial range, the large peaks seen in figure represent decreases in the level of net indebtedness. Where the cost of equity is negative, the farm family has funded the business by either not removing their entitlement for unpaid management and labour from the business or by adding funds from other sources to support the business. The average cost of equity is 3.26%, which is low.

The cost of capital, the total cost of ownership, averaged 5.06%. However the range is quite large and is strongly influenced by the cost of equity. There is no pattern to the movement in the cost of capital (Figure 26).

Table 33 Cost of Capital Analysis for Case Farm Four.

Growth	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Cost of Debt	$10,782	$37,146	$38,299	$28,823	$33,878	$47,658
Cost of Debt (%)	6.19%	26.65%	15.98%	12.94%	13.75%	4.62%
Cost of Equity	$324	$57,890	$23,790	$71,834	$12,822	$14,149
Cost of Equity (%)	0.03%	5.04%	2.22%	6.51%	1.17%	1.34%
Cost of Capital	$10,254	$92,102	$59,063	$98,380	$44,024	$61,807
Cost of Capital (%)	0.80%	7.15%	4.51%	7.42%	3.28%	2.96%
Value Created	$28,074	-$22,174	-$21,246	-$34,965	$19,863	-$25,207
Net Present Value	$4,771,705	$977,526	$838,827	$854,962	$1,945,989	$1,238,200

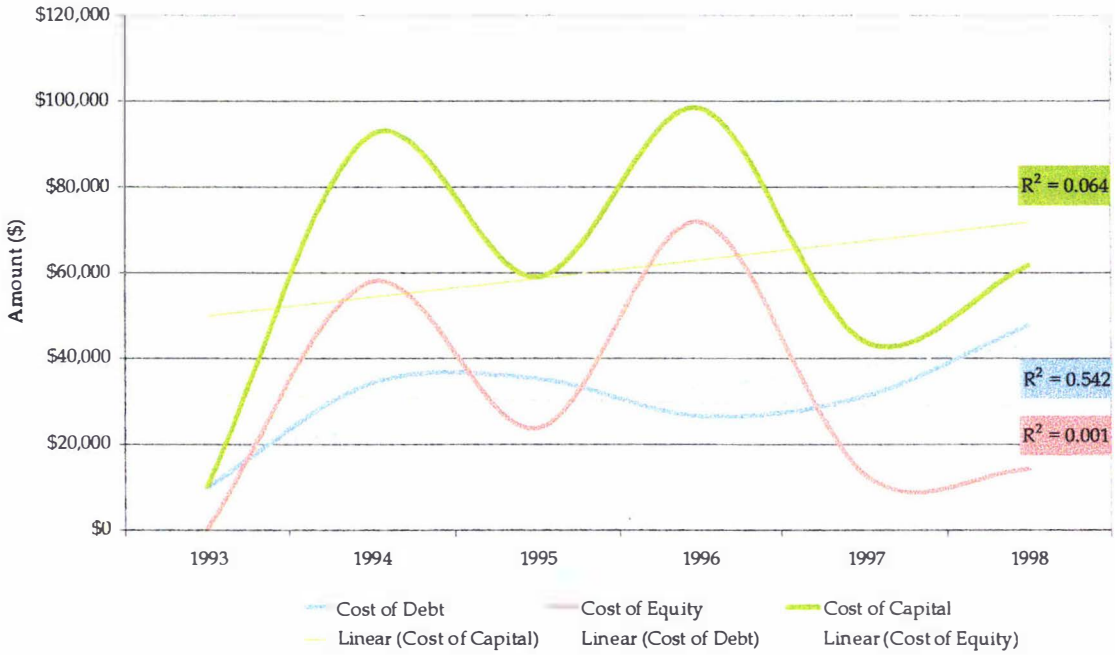

Figure 26 Cost of Capital trends for Case study four.

The Value created metric for the period of analysis shows a net divestment from the business of $55,656 suggesting that assets may have been depleted through reduced repairs and maintenance, or reduction in fertiliser etc. When net present value is compared to the capital value of the assets there are only two years where the productive value is greater than the capital value.

4.4.6 Summary:

The business has a high cost of operation with farm cash costs averaging 60% of gross farm income, which when other costs are deducted leaves little for reinvestment in the farm, as demonstrated in the value created metric. While the capital turnover ratio is of a moderate level this is expected to improve as development occurs on the new dairy block. This will allow cow numbers to increase further effecting the income generating ability of the farm. The cost structure will need to be closely monitored. An increase in the milk pay-out would also be very beneficial.

A major issue currently facing the farm is the milking shed, which is currently at its limit. Expansion of the shed will be carried out before the 1999-2000 season begins.

With the current solvency and debt servicing levels, obtaining additional borrowings may be difficult especially as the farm is also short of stock since the addition of the extra land.

4.5 Case Study Farm Five:

4.5.1 Introduction:

Case farm five is a winter milk dairy farm comprising of a 133ha milking platform (total area 160ha) and a spring herd of 270 cows and a autumn calving herd of 80 cows to meet a winter milk contract of 1,520 litres per day. The milking platform is made up of several different land blocks. The home farm is 52ha and is predominantly sand hills and flats with some loam and peaty swamp land. Forty-four hectares was purchased from their parents in early 1999. Another 14ha was leased from the parents and a 48ha sand block is leased with about 50% of the area being available to the milking herd. A 76ha run-off block is also leased for young stock and dry cows. The lease on the run-off block expires early in 2000 and a grazing contract will mostly likely substitute the run-off block because of the time factor involved stock management.

The farm is operated as a partnership between husband and wife. Until early 1999, the couple sharemilked for their parents and themselves as co-owners with the split being based on the amount of land owned, 46% owned by the couple and 54% by their parents. The couple now owns 96ha of the milking platform and are owner operators.

The farm employs a full time labour unit who has been on the farm for 9 years. The worker is considered very capable and motivated but not very ambitious, not that this is seen as a problem by the couple as the working relationship is very good. Casual staff are employed throughout the spring and summer period and it is estimated that this represents one third of a full time labour unit. The husband is involved in all the practical work and both partners are involved with updating and monitoring budgets and cash flows, however, the wife is predominantly responsible for financial monitoring and farm bookkeeping.

4.5.2 Monitoring and Management Tools:

The farming couple began developing business plans in 1993 as a tool to help them focus and identify the direction they wanted the business to move in. At this time, the health of the business was poor and they realised that without a focused view the

business was becoming non-viable. Through developing a business plan, the couple realised that they have the greatest influence over the success of the business and that goal setting was a very important component. Philosophies were developed and values identified, for example, "no excuses". This done, a mission statement was developed. The first plans focused on money and production and there was no consideration of people issues, either staff or family, however, these issues were included in later plans.

Financial data is updated fortnightly using Concepts Cash Manager®. Spreadsheets are used for predicting milk flow which in turn are linked to the feed budget. These form the basis of the financial budget. Milk flow is monitored every 10 days with increased frequency towards the end of the month. Feed budgets are done fortnightly however in spring this is more difficult as pasture growth exceeds cow requirements, and because of the limited havestable area, grazing is the only control option. Feed budgets are based on historic growth rate data, which over time provides a more powerful database for predictive purposes, for example, response rates to urea at certain times of the year. The couple strongly believes that the more historic data available, the better their predictions for the future are.

The couple finds that having a written plan motivates and focuses them and the development and revision of plans is always done together. Production targets are based on their own production and progress is tracked against top 10% of market milk suppliers on a per cow and per hectare basis. Previous achievements are analysed and a consultant is used as a sounding board. All farm factors are considered when revising the business plan e.g. cow numbers over time, share investments etc. In addition, the plan provides challenges, which provide and encourage growth of the business and the individuals within it. Other information considered when developing the business plans is performance information of other farms, however, this is of limited value as different farms have differing strengths and weaknesses. A discussion group (LIC) and a rural women's discussion group provides between farm comparisons.

Monitoring is considered essential, and the couple has found that the more information collected the more "addictive" monitoring becomes as a better picture of the situation can be developed. This process has reduced the level of stress and the

chance of surprises, nice or nasty, has been greatly reduced. Monitoring allows control and helps the couple drive their business and make decisions with confidence, though not all decisions will work perfectly.

The planning is an essential tool for the couple but find that they run into trouble by assuming that everyone else does it or should do it, because it has been so beneficial for them. Honesty allows for improvement compared to "fudging" which could lead to failure. The couple find it encouraging to look at the achieved targets. The plan is reviewed at least six monthly and notes are added to the plan when targets are not achieved to provide feedback, for example incidences such as extreme seasonal conditions.

The business plan follows the following format:

1) Mission Statement
2) Current position
    i) Production
    ii) Pasture cover
    iii) Cash budget
3) Goals
    i) Family
    ii) Production
    iii) Financial
    iv) Farm
    v) Stock
    vi) Pasture production
    vii) Labour
4) Future production goals for the next five years
5) How we propose to achieve our goals
6) SWOT analysis
7) Balance sheet

The indicators used to measure business success are EFS (total) as it represents the money available for the non-operating costs of the business. EFS is also used to compare the business' performance between years however the couple do not place much value on EFS when it is between farms. Efficiency ratios such as cash farm costs as a percentage of gross farm income are of increasing importance when measuring business success.

4.5.3 Mission Statement:

This couple had developed their own mission statement in conjunction with their business plan.

4.5.3.1 Mission Statement:

"To achieve a high level of production of quality milk in a cost effective and efficient operation whilst providing a good lifestyle for our family."

4.5.4 Goals:

Family:

- To provide our children with a secure and happy family environment, and to encourage and guide them to develop as individuals with a strong sense of worth.
- To give our children a good education.
- To support fully our children's schooling and sports activities, on both a family and a community level.

Farm:

- To continue the development of the farm.
- Purchase a new or additional farm.
- Tree planting for amenity with view to future subdivision, and forestry blocks.
- To produce grade free milk.
- Look at subdividing / selling home farm.
- To provide a good, safe and stimulating work environment.
- To have a good relationship with our workers and to encourage their development, and education in Dairy Farm Management.

4.5.5 Business Analysis:

Case farm five's production has increased at an average annual rate of 6.67% (Table 34). This has been achieved largely through increased cow numbers with per cow production fluctuating between 319 and 340 kg MS. Per hectare production increased as a direct result of increased the herd size. Milk price has declined at an average annual rate of 3.77%. The winter milk contract of 1,520 litres per day at 32 cents per litre for 92 days currently contributes about $44,749 to milk income.

Table 34 Production Analysis for Case Farm Five.

Production Analysis	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
Total Production (kg MS)	71,470	82,380	96,900	95,800	105,150	105,200	103,555
% change		15.27%	17.63%	-1.14%	9.76%	0.05%	-1.77%
Cow Numbers	220	250	290	290	309	330	350
Per cow production	325	330	334	330	340	319	296
Per hectare production	694	800	729	720	791	791	779
Avg price per kg MS	$4.72	$4.03	$3.84	$3.38	$3.86	$4.00	$3.65
% change		-14.53%	-4.77%	-11.86%	14.10%	3.62%	-8.62%

The level of equity has been steadily increasing as demonstrated by both the equity percentage (R^2=0.742) and the level of net worth (Table 35). Equity (net worth) has been increasing at an annual average rate of 5.50% between 1992-93 and 1997-98. This is a strong level of growth.

Table 35 Solvency Analysis for Case Farm Five.

Solvency	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
Total assets	$1,657,339	$1,701,275	$1,679,718	$1,729,271	$1,782,071	$1,860,154	-
Debt:Equity (gearing)	80%	71%	74%	76%	56%	51%	-
Net worth	$919,289	$993,580	$964,179	$982,598	$1,142,256	$1,231,403	-
Equity	55%	58%	57%	57%	64%	66%	-
Net Indebtedness	$499,776	$430,465	$467,439	$477,763	$359,626	$288,477	-
Change in indebtedness	-$107,126	$69,311	-$36,974	-$10,324	$118,137	$71,149	-
Equity Growth		7.48%	-3.05%	1.87%	13.98%	7.24%	-
Debt Servicing:GFI	27.09%	21.61%	20.74%	30.58%	20.42%	17.61%	24.64%
Debt Servicing:GFI (inclu P)	27.09%	65.27%	26.31%	35.75%	44.03%	17.61%	24.64%

The level of net indebtedness has varied, however, increases in the level are directly related to and increase in assets with the exception of the 1994-95 year.

The level of debt servicing (interest and rent) as a percentage of GFI is high with an average level of 23.14% (Table 35). Approximately two thirds of the total debt servicing is interest, the other third being rent. At this level, further expansion through borrowings is likely to be limited unless matched by a substantial increase in GFI that either maintains the level or reduces it.

Gross farm income has remained relatively stable with an average level of about $440,000 (Table 36). Cash farm expenses have also remained relatively stable and on average represent 47% of GFI, which is below the industry recommendation of 50%. The level of Net Income increased substantially in the 1996-97 and 1997-98 years because of increased production and a 14% and 3% increase in milk price respectively.

Table 36 Profitability Analysis for Case Farm Five.

Profitability	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
Gross Farm Income	$438,072	$407,642	$450,184	$385,114	$457,049	$483,340	$434,547
Cash Farm Expenses	$214,028	$213,440	$189,415	$210,318	$164,468	$224,118	$229,808
Cash Farm Expenses % GFI	48.86%	52.36%	42.08%	54.61%	35.98%	46.37%	52.88%
Net Income	$88,540	$111,459	$149,839	$53,311	$184,156	$165,935	$97,647
Return on Equity	6.64%	8.07%	11.78%	1.74%	12.74%	10.13%	-
EFS	$179,701	$168,319	$206,942	$134,831	$238,852	$209,792	$160,989
EFS/ha	$1,745	$1,634	$1,556	$1,014	$1,796	$1,577	$1,210
Return on Assets	10.84%	9.89%	12.32%	7.80%	13.40%	11.28%	-
Operating Profit Margin	42%	43%	47%	35%	53%	45%	37%
NOPAT	$122,663	$114,893	$141,257	$92,035	$163,039	$143,203	$109,890
Capital turnover ratio	26%	24%	27%	22%	26%	26%	-

Return on equity increased steadily during the first three years of the analysis and then fell substantially in the 1995-96 year due to severe drop in net income. A strong recovery is seen in the subsequent years. The average level of ROE is 8.5%.

The level of EFS shows substantial fluctuations (R^2=0.076). The variations seen in the EFS is for similar reasons as those shown in the Net Income. The operating profit margin for the farm is high, averaging 43%.

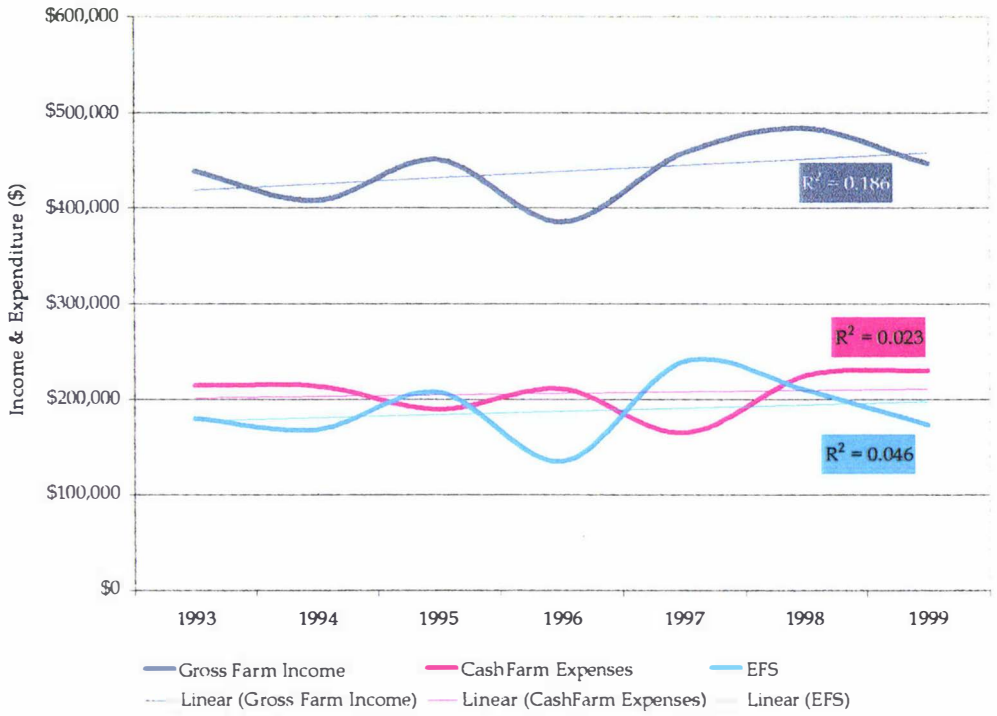

Figure 27 Income and Expenditure trends for Case Farm Five.

The ROA averaged about 11%, which is a high level and above the industry recommendation. This suggests that the asset base has a high earning potential and that a high proportion of those earnings is retained as profit. The level of capital efficiency is high with an average turnover ratio of 25% (Table 36). This suggests that the income earning potential of the assets is quite high and at a viable level

The post tax cost of debt is high, averaging 9.67% of total liabilities and the actual cash cost of debt is relatively stable (Table 37). The cost of equity fluctuates quite substantially with large levels of personal drawings being removed in the 1993-94 and 1996-97 years (Figure 28). The cost of equity for this business appears to have a strong correlation to the cost of capital.

Table 37 Cost of Capital Analysis for Case Farm Five.

Growth	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99
Cost of Debt	$80,997	$60,143	$63,722	$80,389	$63,700	$58,093	$73,100
Cost of Debt (%)	10.97%	8.50%	8.91%	10.77%	9.96%	9.24%	-
Cost of Equity	$65,301	$142,647	$59,095	$36,398	$184,070	$95,954	$14,605
Cost of Equity (%)	7.10%	14.36%	6.13%	3.70%	16.11%	7.79%	-
Cost of Capital	$145,851	$202,458	$122,465	$116,342	$247,418	$153,726	$87,705
Cost of Capital (%)	8.80%	11.90%	7.29%	6.73%	13.88%	8.26%	-
Value Created	-$23,148	-$87,296	$19,227	-$24,384	-$83,787	-$9,970	$31,142
Net Present Value	$1,395,624	$969,386	$1,942,435	$1,368,881	$1,179,659	$1,739,795	-

The value created metric for this business indicates that there has been an overall discrepancy between the operating profits and cash funding costs of $178,216 (Table 37). This could suggest that farm operating expenditure may be sacrificed to meet the cash costs of funding. A complication with this business is that it includes the farmer's parent's funding costs. These costs are not all attributable to this business, unfortunately information available did not allow business specific funding costs to be identified from the parent's accounts.

The net present value reflects the productive value of the farm based on the relationship between the NOPAT and the cost of capital. For this farm business the net present value is only greater than the capital asset value in two of the six years. Again these results are influenced by the inaccurate allocation of the parent's cost of capital.

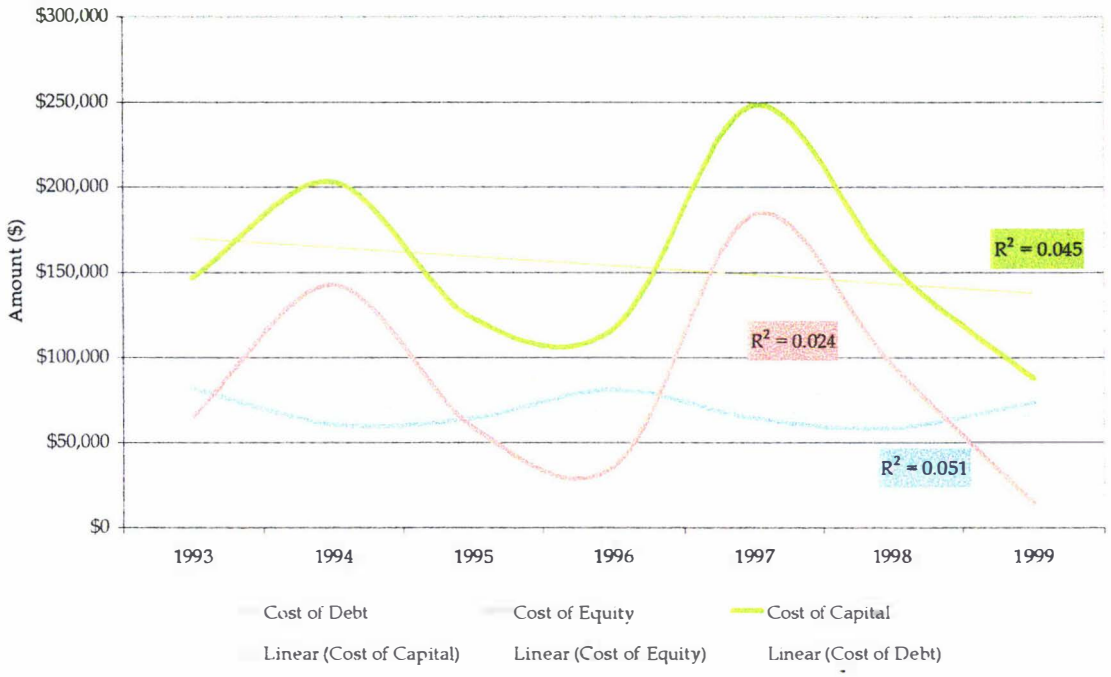

Figure 28 Cost of Capital trends for Case Farm Five.

4.5.6 Summary:

This farm business demonstrates strong operating efficiencies and profits however there is a strong imbalance between the NOPAT and the cost of capital. This in part is due to two families removing drawings from the farm. This may be falsely represented in the analysis as not all of the interest payments and drawings removed by the parents are farm related. The business is exhibiting strong equity growth and has high returns on equity and assets.

There were difficulties in reconciling the two sets of accounts involved with this business because of different balance dates. Therefore this may lead to misleading information in the funding component of the farm business. However, the overall performance of the farm suggests that the farming couple will be able to achieve their goals. The couple has a clear focus and understanding of what needs to be achieved and they have a control system in place to help them achieve their goals.

4.6 Case Study Farm Six:

4.6.1 Introduction:

Case farm six is a 283ha dairy and deer farm. The dairy enterprise operates on a 60ha milking platform and milks year round with a 1,260 litre milk quota, applying for the months May June July. The dairy herd is currently 180 cows with no immediate expansion possibilities. The deer unit is 38ha and runs about 160 breeding hinds for venison production. The remaining farm area is used as a run-off. Of this, 35ha is unavailable for grazing as it is either lake, retired bush or plantation area. Stock grazing the run-off are sourced from the dairy herd with all calves, except Friesian bulls reared and farmed through to works weight or in the case of the Friesian heifers until calving. Most of the dry cows are grazed on the run-off and some feed conserved and taken to the home block for winter supplement. The soil types on the farm are Kiwitea silt loam (50ha), peat (28ha) and sand (180ha). Annual rainfall is between 750 – 1,250mm.

The farm has been in the family since 1888, and initially operated as a sheep farm with some beef cattle. The farm operates as a partnership between the farmer and his wife. The partnership leases the land from a company run by the farmer and his father of which the farmer is the majority shareholder (97%).

The farm grows its own fodder crops, in particular maize silage, which is important for ensuring the winter milk contract is met especially as Kiwi is tightening its volume requirements. This is grown on the run-off and transported to the home block and ensiled there.

The farm employs a full time labour unit whose main roll is that of herd manager, however he is not involved in pasture allocation of feed management. The employee's role has not changed on the farm and he has never asked for more responsibility. The farmer feels the employee has reached his potential and he follows recipes but does not make adjustments if the recipe is not quite right. The employee has been on the farm for 10 years and is provided with a house.

The farmer's wife, a teacher, has recently gone back to teaching, and is finishing off her tertiary qualifications. She does not work on the farm but participates fully in the

enhancement and development of the lake and bush areas. The farming couple has five children aged between five and fifteen years of age. Some formal succession planning is in place and the land holds very strong sentimental value. A driving goal is to ensure that the farm is viable and can comfortably support the family and remain in the family through the children being able to use the farm to generate their own income, whether this be through farming or other activities.

4.6.2 Monitoring and Management Tools:

A plate meter is used on the farm but a regular farm walk is not conducted. The farmer uses the plate meter to calibrate his "eye" for visual assessment. The summer rotation is set and pasture is measured by eye due to the greater inaccuracy of the plate meter over this time. Drying off decisions are made on the basis of pasture levels and expected pasture growth/demand.

Herd testing is done on a bimonthly basis to assist with production and culling decisions and the Dairy Win programme is used to further analyse production data. All calves born will now go into the programme with the new identification system. There is a mastitis tester in the shed (conductivity meter) that is used to determine the udder quarters needing treatment. This was put in place due to the increasing quality requirements imposed by the dairy companies and to ensure that the labour unit has as much assistance in identifying and treating infected cows.

Deer production is monitored through killing sheets and different stock classes are analysed. The farmer used to collect deer liveweight data but no longer does this though he says he learnt a lot from the experience.

Concept Cash Manager® is used for bookkeeping, reconciliation, cash flow reports and stock reconciliations. Budgets are prepared, however, they are not updated any more than two or three times a year. While the farmer recognises this as a weakness, he is not concerned because the current cash situation of the business is strong. The Rural Loans Officer from the bank visits the farm once or twice per year and the accountant is used for advise with the business structure and taxation.

Information is also sourced from industry publications such as the *Dairy Exporter*. The farmer is a member of the farmer project team for the Massey University No. 1

Dairy farm and attends the Massey Dairy Farmers conference when it is held locally, and attends other field days. The farmer is also involved in the local discussion group but has not been recently.

4.6.3 Mission Statement and Strategic Intent:

The farming couple developed their mission statement following the completion of the value identification worksheet.

4.6.3.1 Mission Statement:

"To profitably farm this land so that we may enjoy, protect and enhance the amenity value of our lake and bush areas and to provide the best possible environment for raising our children."

4.6.3.2 Statement of Strategic Intent:

Through profitable farming practices, ensure that farm ownership can occur through buying out other family members.

Achieve a rate of business growth that allows for:

1. A comfortable lifestyle for the family.
2. Providing the children with tertiary education.
3. Some overseas travel and retirement.
4. A viable farming unit to be passed on to the children or sold.

Achieve and maintain a lifestyle that allows for the natural assets of the farm to be enhanced while also providing opportunities for leisure and personal development of all family members.

4.6.4 Goals:

- Complete the succession process to the farmer from his father within the next five years.

- To complete teaching degree within five years and continue teaching career.
- To continue to support the family and maintain them as a happy and achieving unit and meet the high time demand required by the children
- To keep the farm in the family and achieve a desired level of lifestyle.
- To develop the homestead area of the farm as well as the lake area into a recreation and amenity area with the possibility of generating income from the activity.
- Provide a good education for all the children.
- Take regular holidays away from the farm for a period of at least three weeks. This is very important.
- Production targets of greater than 360kg MS/cow. The desired level is 380kg MS/cow and 1,200kg MS/ha.
- Continue to support and employ a full time labour unit for the dairy herd.

4.6.5 Business Analysis:

This farm's total production has increased at an average annual rate of 7.64% which is a result of increasing cow numbers and increasing per cow production (Table 38). Per cow production is very high and as herd size continues to increase per hectare production will consistently be over the 1,000kg MS. Milk price has declined at an average annual rate of 4.55%.

Table 38 Production Analysis for Case Farm Six.

Production Analysis	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total Production (kg MS)	45,308	50,858	50,858	58,988	61,180	65,000
% change		12.25%	0.00%	15.99%	3.72%	6.24%
cow numbers	140	157	157	168	178	171
Per cow production	324	324	324	351	344	380
Per hectare production	871	942	848	983	1,020	1,083
Avg. price per kg MS	$4.77	$3.97	$4.38	$4.21	$3.94	$3.70
% change		-16.71%	10.30%	-3.88%	-6.39%	-6.09%

The net worth of the business is increasing each year with an average growth rate of 2% (Table 39). The level of equity is high and increasing as the business consolidates the purchase of additional land in 1993-94. Equity levels are now at the initial level of 85%.

Table 39 Solvency Analysis for Case Farm Six.

Solvency	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total assets	$2,372,463	$2,412,099	$2,710,279	$2,768,465	$2,845,971	$2,679,024
Debt:Equity (gearing)	18%	34%	29%	30%	30%	18%
Net worth	$2,017,765	$1,801,574	$2,102,602	$2,133,353	$2,182,425	$2,273,111
Equity	85%	75%	78%	77%	77%	85%
Equity Growth		-12.00%	14.32%	1.44%	2.25%	3.99%
Net Indebtedness	$106,814	$409,996	$361,367	$336,745	$280,393	$281,026
Change in indebtedness	$26,839	-$303,182	$48,629	$24,622	$56,352	-$633
Debt Servicing:GFI	6.32%	7.20%	13.43%	12.07%	8.00%	9.52%
Debt Servicing:GFI (inclu P)	10.07%	7.20%	16.07%	17.94%	11.44%	13.87%

The level of net indebtedness shows a continual reduction (Table 39). The 1993-94 year is the exception due to land acquisition and the requirement for additional borrowings. This increase in net indebtedness is matched by an increase in assets. The level of debt servicing is low and is unlikely to detrimentally effect cash flow, even with principal repayments the level is still quite low. The 1993-94 year is also the only year where principal repayments were not made.

There is no significant trend in either GFI or Cash Farm Expenses (Figure 29). However, the years ending 1995 and 1996 show increases of about $20,000 and $15,000 in expenses which are not easily identified as being attributable to specific items (Table 40). The other four years show that expenditure is very stable. Therefore, the level of GFI largely influences expenses as a percentage of GFI.

The ROE averages 4.68% and appears to be declining (R^2=0.178). If net income stays relatively constant and net worth continues to increase then ROE will continue to decline to a level equal to the ROA. Increased cash expenditure and an increase in depreciation resulted in the low NFI causing the low level of ROE in 1994-95.

Table 40 Profitability Analysis for Case Farm Six.

Profitability	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Gross Farm Income	$314,407	$313,541	$320,870	$356,973	$360,215	$311,651
Cash Farm Expenses	$150,972	$156,595	$175,182	$170,326	$154,955	$152,838
Cash Farm Expenses % GFI	48.02%	49.94%	54.60%	47.71%	43.02%	49.04%
Net Income	$153,799	$127,739	$84,202	$127,895	$151,329	$117,527
Return on Equity	6.38%	5.70%	2.82%	4.82%	5.79%	4.07%
EFS	$148,671	$125,322	$102,309	$145,982	$155,131	$122,200
Return on Assets	6.27%	5.20%	3.77%	5.27%	5.45%	4.56%
Operating Profit Margin	45%	45%	31%	42%	43%	40%
NOPAT	$105,627	$76,825	$101,470	$118,691	$118,961	$62,436
Capital turnover ratio	14.07%	11.58%	12.22%	12.56%	12.55%	11.41%

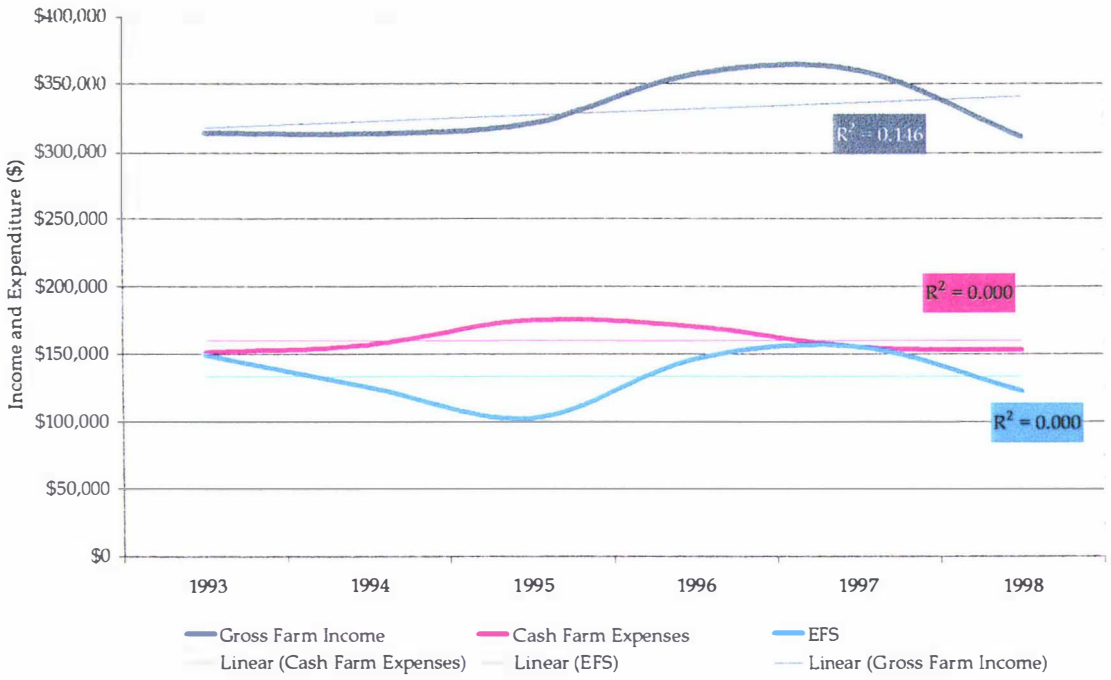

Figure 29 Income and Expenditure trends for Case study six

EFS has a variation of $30,000, again with the exception of the 1994-95 year. The average EFS is $130,200 (Figure 29). This suggests that the farm business is a well controlled system. The operating profit margin is also stable at about 43% however, the 1994-95 year drops the average level to 40%, though this is still a relatively strong position (Table 40).

The level of capital efficiency is low which is more a reflection of the high asset value rather than income generation (Table 40). There is a large area of land used for run-

off purposes and is not directly generating income but does save on some expenditure.

The average cost of capital for the business is 3.51% (Table 41). This is relatively low however there is substantial variation within the six (Figure 30).

Table 41 Cost of Capital Analysis for Case Farm Six.

Growth	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Cost of Debt	$14,119	$16,045	$30,627	$30,612	$20,463	$21,082
Cost of Debt (%)	3.98%	2.63%	5.04%	4.82%	3.08%	5.19%
Cost of Equity	$48,530	$9,341	$115,031	$76,163	$121,630	$39,500
Cost of Equity (%)	2.41%	0.52%	5.47%	3.57%	5.57%	1.74%
Cost of Capital	$62,649	$25,386	$145,658	$106,775	$142,093	$60,582
Cost of Capital (%)	2.64%	1.05%	5.37%	3.86%	4.99%	2.26%
Value Created	$42,979	$51,439	-$44,188	$11,916	-$23,132	$1,854
Net Present Value	$4,000,033	$7,299,737	$1,888,072	$3,077,412	$2,382,658	$2,761,008

The value created metric shows the level of reinvestment or capital appreciation in the business varies, however, overall there has been a reinvestment or appreciation in the business of $40,868.

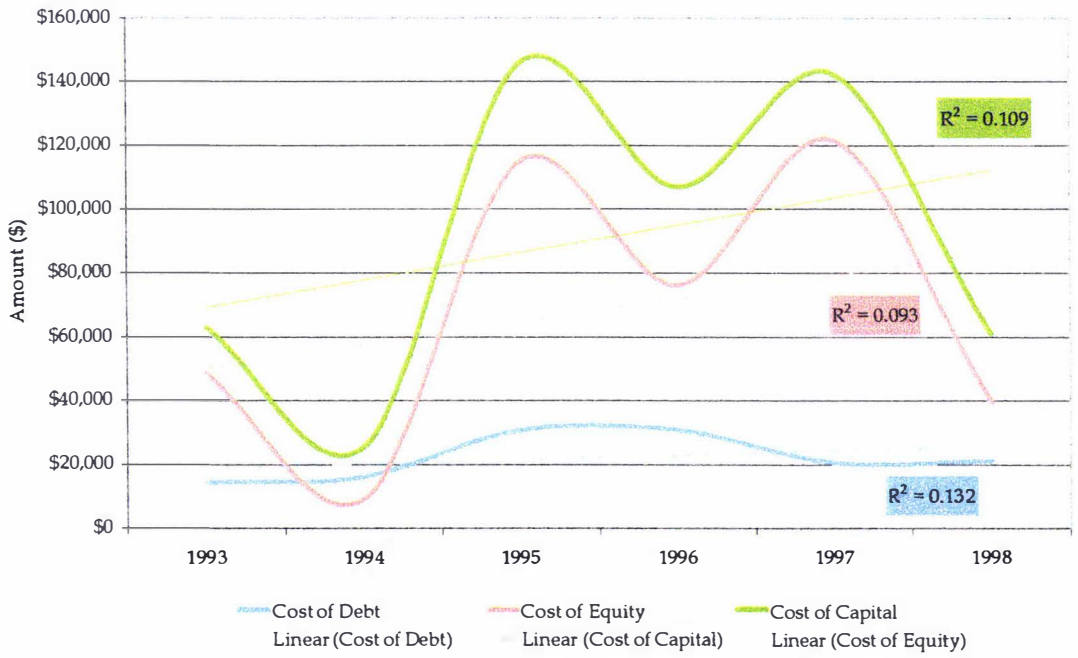

Figure 30 Cost of Capital trends for Case Farm Six.

The net present value is consistently greater then the capital value, which reflects the low cost of capital (Table 41). Again, the 1994-95 year was the exception, which was due to the low NFI. The 1993-94 year also stands out because of the high net present value created by the very low cost of capital. There is a strong correlation between the cost of equity and the cost of capital for this business (Figure 30). The productive value of the farm in this year is about one million dollars less than the capital value.

4.6.6 Summary:

This business is very stable and in a strong and healthy position should expansion be desired. The level of equity and debt servicing are not constraining factors and the pattern of change in net indebtedness is very positive.

The cost of equity has the potential to increase substantially as children get older and the farming couple begins to pursue their own leisure activities. The greatest challenge to the business will be meeting the increase in equity requirements. However, these may be countered by the off-farm income from the wife's teaching. The dairy enterprise is unlikely to be able to expand, as there is no suitable land readily available. While some deer land could be converted to dairying, increased herd size would require a new shed to be built in a more central location and conversion of suitable deer land would result in decreased profitability of the deer enterprise. Long term profitability and sustainability is important if the farm is to remain in the family as a productive asset.

4.7 Case study Farm Seven:

4.7.1 Introduction:

Case farm seven is currently a 135ha-milking platform with a 530-cow herd. The herd is split into a 345 cow spring calving herd and a 195 cow autumn calving herd to fulfill a 3,000 litre per day winter milk contract. The farm was initially purchased in 1966 as a 25ha block milking 60 cows with a sharemilker. In 1968 and additional 32 ha was purchased and a another 60 cows were milked. In 1970 the two units were combined and a 16 bail rotary was built. Additional land has been continuously added to the farm: 110ha in 1970, 22ha in 1985-86 and 22ha in 1992. Of this land 100ha is able to be irrigated, a vital component for an autumn calving herd and protecting late lactation of the spring calving herd. In addition to the farm, 50 ha has been leased since 1986 as a dry stock and supplement block, 30ha since 1993 as a milking area and 24ha since 1995 which is used for young stock.

The farm also has a cropping history with process cropping, cereal cropping and maize cropping for silage. This fitted in extremely well with the pasture renovation programme and land development. Barley was grown for home consumption but in the last five years, there have only been two crops. Soil types on the farm are alluvial silts, clays and stony/gravelly accretion land. Over the last two years fertiliser has been applied at a rates of 120-230 kg N/ha, 41 kg P/ha and 33 kg S/ha. Soil test data from 1998 shows pH at 5.7, Olsen P of 34 (23-51), potassium of 5 (5-12) and sulphur of 6 (3-12). Losses based on 1998 production would show the phosphorus application is short by 44kg P/ha and sulphur is 77kg S/ha short. Annual rainfall is about 950mm.

The business was operated by the partnership, a 50:50 arrangement with the farmer and his father. The partnership owned the machinery and livestock and leased the land from the four landowners. A limited liability company was established on the advice of the accountant and lawyer and it now leases the land from the partnership. The company now owns machinery and livestock. The shareholders of the company are a family trust set up by the husband and a trust established by the wife's business.

The farming family is the husband and wife and their four children. The eldest child is working full time on the farm, another is at university, one is employed off farm and the youngest is still at secondary school. Succession is an important issue on this farm.

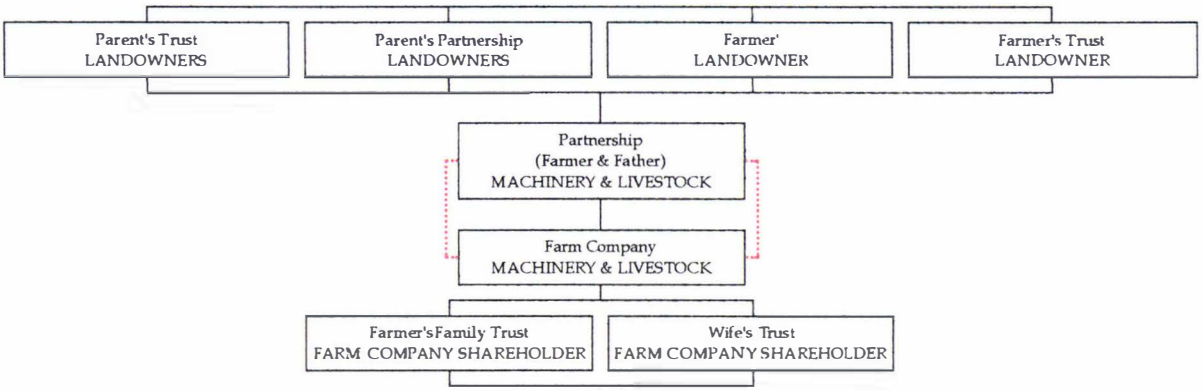

Figure 31 Business structure of Case Study Seven.

4.7.2 Monitoring and Management Tools:

Pasture growth rates and covers are measured fortnightly throughout the year with the exception of summer when measurements are of low accuracy. Soil tests are undertaken every two years on six sites around the farm to ensure that soil nutrient conditions are adequate for required pasture growth.

All supplements are feed tested and the rations are then calculated on a dry matter basis using the load scales on the feed out wagon. This has allowed greater accuracy in feeding through less substitution and improved pasture utilisation.

Production is monitored every 10-days and herd testing occurs bi-monthly. This information is graphed along with somatic cell count data and placed on the office wall together with previous seasons data. This is seen as a step to meeting the dairy company's best farm practice for milk quality programme that they are introducing.

The condition and weights of the milking herd and young stock are closely monitored with set condition scores for the cows at key times through out the season. Young stock have a series of minimum weight targets for key times also. Total production and cow number targets are set and monitored.

EFS is monitored annually and targets are set. The farmer finds measuring EFS more useful than measuring production only as it provides "an apples with apples" comparison over time for their own farm and with others. EFS also reflects the level of funds available for discretionary spending.

ROA is also monitored and a target of 15% has been set based on the gross profit required to meet costs. The farmer believes that it an important measure of the business' profitability.

Farm working expenses as a percentage of GFI is deemed a critical measure. The farmer spends a lot of time breaking costs up and allocating them to particular areas. His aim is to be able to identify expenditure for any enterprise or enterprise component on the farm e.g. young stock, grass silage, maize silage etc.

Cash flow budgets are prepared and compared to actual income and expenditure using Concept Cash Manager ®. In addition to this, a capital asset schedule has been developed listing the expected movement of plant and machinery for the next ten years (1998-2008). A replacement programme for the next five years has been developed with project expenditure.

4.7.3 Mission Statement:

This farming couple had developed their own mission statement in conjunction with their business plan. The vision for the farm business is:

To be the best.

4.7.3.1 Mission Statement:

"To increase sustainable net income by being a preferred supplier of high quality milk and dairy livestock, by adopting excellence in farm management practices and technologies and by developing beneficial partnerships with our team of staff, while embracing the values of integrity, honesty and the pursuit of knowledge."

4.7.4 Goals

The goals for this farm business are listed in Figure 32. This hierarchy is the basis of the business plan.

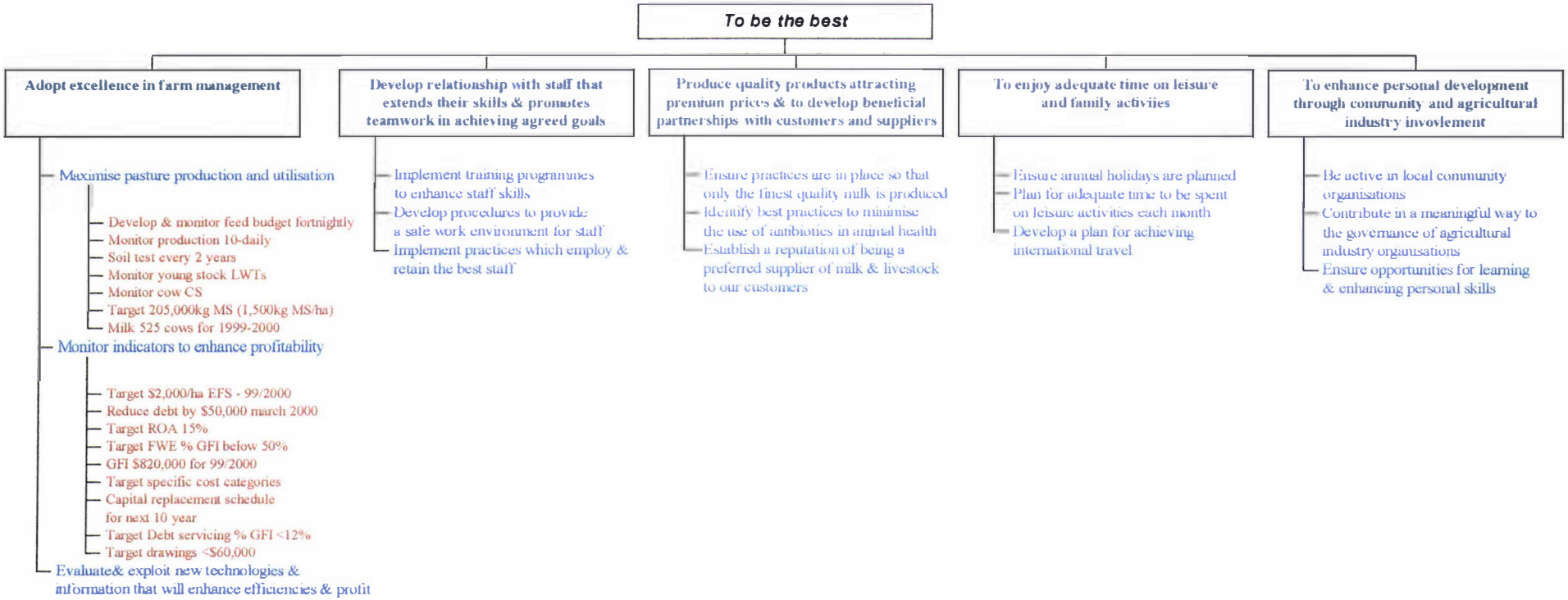

Figure 32 Goal Hierarchy For Case Farm Seven.

4.7.5 Business Analysis:

The production of this farm has increased by an average of ten percent per year. This represents very strong production growth (Table 42). This increase in production is due to increasing herd size; there are also some very noticeable differences in per cow production figures. Production per hectare is also very high. The milk price reflects the value of the sizeable winter milk contract on this farm with average milk price being substantially greater than the seasonal milk price. Milk price per kg MS has declined at an annual average rate of 4.35%.

Table 42 Production Analysis for Case Farm Seven.

Production Analysis	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total Production (kg MS)	120,400	135,850	164,770	160,676	179,305	192,528
% change		12.83%	21.29%	-2.48%	11.59%	7.37%
cow numbers	345	345	425	440	460	505
Per cow production	349	394	388	365	390	381
Per hectare production	1,338	1,509	1,318	1,397	1,434	1,426
Avg price per kg MS	$4.80	$4.14	$3.80	$4.13	$3.74	$3.78
% change		-13.78%	-8.21%	8.76%	-9.38%	0.87%

The level of business assets has remained reasonably constant over the six years of analysis (Table 43). However, the level of net worth has been declining at an average rate of 3.27% per year. This is reflected in the decline in the level of equity and the change in net indebtedness shows that core borrowings have increased in all years except 1997-98. However, the increasing level of net indebtedness is not directly related to the purchase of assets, hence the decline in equity. The level of equity was high at 82% but has dropped to 68%, which may impose some immediate restriction on the business' ability to expand and develop.

Table 43 Solvency Analysis for Case Farm Seven.

Solvency	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total assets	$2,953,091	$3,069,288	$3,043,408	$3,155,351	$3,158,826	$3,027,590
Debt:Equity (gearing)	22%	23%	31%	46%	48%	46%
Net worth	$2,420,685	$2,497,800	$2,329,348	$2,166,052	$2,132,072	$2,068,827
Equity	82%	81%	77%	69%	67%	68%
Equity Growth		3.09%	-7.23%	-7.54%	-1.59%	-3.06%
Net Indebtedness	$499,307	$534,360	$650,715	$937,050	$979,805	$915,898
Change in indebtedness	-$20,510	-$35,053	-$116,355	-$286,335	-$42,755	$63,907
Debt Servicing:GFI	8.43%	8.81%	10.07%	14.65%	19.06%	16.58%
Debt Servicing:GFI (inclu P)	8.43%	13.51%	10.07%	14.65%	19.06%	18.77%

The level of debt servicing has increased steadily, with a slight drop in the 1997-98 year due to a reduced interest payment (Table 43). Debt servicing has increased to a level that while manageable may restrict further borrowing or additional rent payments unless accompanied by an immediate increase in income. Principal repayments were not made between 1994-95 and 1996-97.

GFI exhibits an increasing trend (R^2=0.754) due to the increasing level of production however the income in 1993-94 does not fit this pattern (Table 44). The cost structure has increased and fluctuated since 1994, with 1995-96 showing a large increase in expenditure. The variations in both income and expenditure are reflected in the level of cash farm expenses as a percentage of GFI. Cash farm expenditure averages 56.54% of GFI for the period of analysis.

Table 44 Profitability Analysis for Case Farm Seven.

Profitability	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Gross Farm Income	$682,850	$733,834	$709,150	$729,864	$747,129	$809,887
Cash Farm Expenses	$368,569	$364,015	$412,903	$486,080	$438,977	$421,818
Cash Farm Expenses % GFI	53.98%	49.60%	58.23%	66.60%	58.76%	52.08%
Net Income	$200,503	$257,727	$176,965	$82,212	$110,972	$200,331
Return on Equity	7.39%	9.45%	6.46%	2.53%	3.86%	8.16%
EFS	$294,090	$350,685	$290,625	$277,762	$300,442	$358,057
Return on Assets	9.96%	11.43%	9.55%	8.80%	9.51%	11.83%
Operating Profit Margin	43%	48%	41%	38%	40%	44%
NOPAT	$199,991	$238,478	$197,635	$188,888	$204,311	$243,491
Capital turnover ratio	23.12%	23.91%	23.30%	23.13%	23.65%	26.75%

The ROE averaged 6.31% variations are due to the changing levels of both NFI and net worth. The level of NFI largely influences the variation in ROE. If NFI remains at a constant level an increase in ROE will be seen if the decline in net worth continues. It is unlikely that declining levels of net worth is considered a desirable trend.

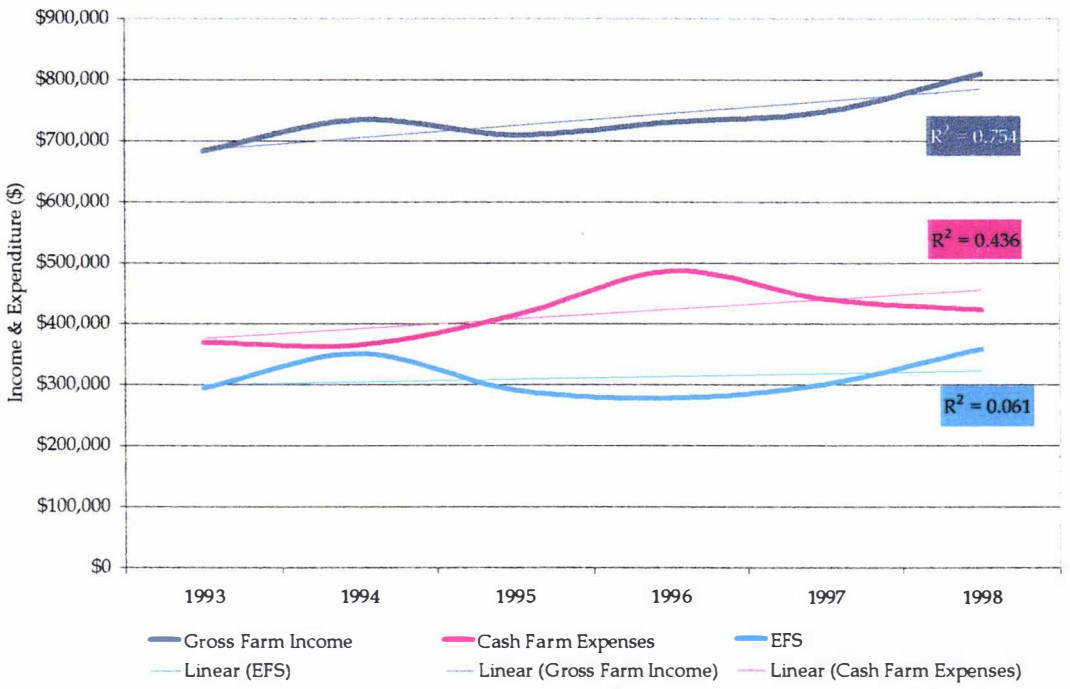

Figure 33 Income & Expenditure trends for Case Farm Seven

There is no discernable trend in the level of EFS (R^2=0.061) due to the variability that occurs between years (Figure 33). The ROA averaged 10.18%, which is a high level (Table 44). Variation in ROA follows the variation in the EFS, as the asset base value is very stable. The operating profit margin is 42.4%, which is also a strong level. The level is very consistent over the period of the analysis. The capital turnover ratio is high, especially given the level of investment in machinery. This ratio is also very stable.

Table 45 Cost of Capital Analysis for Case Farm Seven.

Growth	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Cost of Debt	$30,801	$49,732	$57,786	$82,579	$106,791	$84,228
Cost of Debt (%)	5.79%	8.70%	8.09%	8.35%	10.40%	8.79%
Cost of Equity	$84,731	$106,637	$149,684	$157,942	$123,622	$208,070
Cost of Equity (%)	3.50%	4.27%	6.43%	7.29%	5.80%	10.06%
Cost of Capital	$115,532	$156,369	$207,470	$240,521	$230,413	$292,298
Cost of Capital (%)	3.91%	5.09%	6.82%	7.62%	7.29%	9.65%
Value Created	$84,459	$82,109	-$9,835	-$51,634	-$26,101	-$48,807
Net Present Value	$5,111,922	$4,680,960	$2,899,143	$2,477,980	$2,800,991	$2,522,052

The cost of capital is increasing by approximately 15.8% ($32,500) per year ($R^2$=0.932). This is due to both the costs of debt and equity increasing at a rate of $19,000 and $13,000 respectively (Figure 34). The cost of capital averaged 7.3% post-tax, which is a reasonably high figure compared to many farming businesses (Table 45).

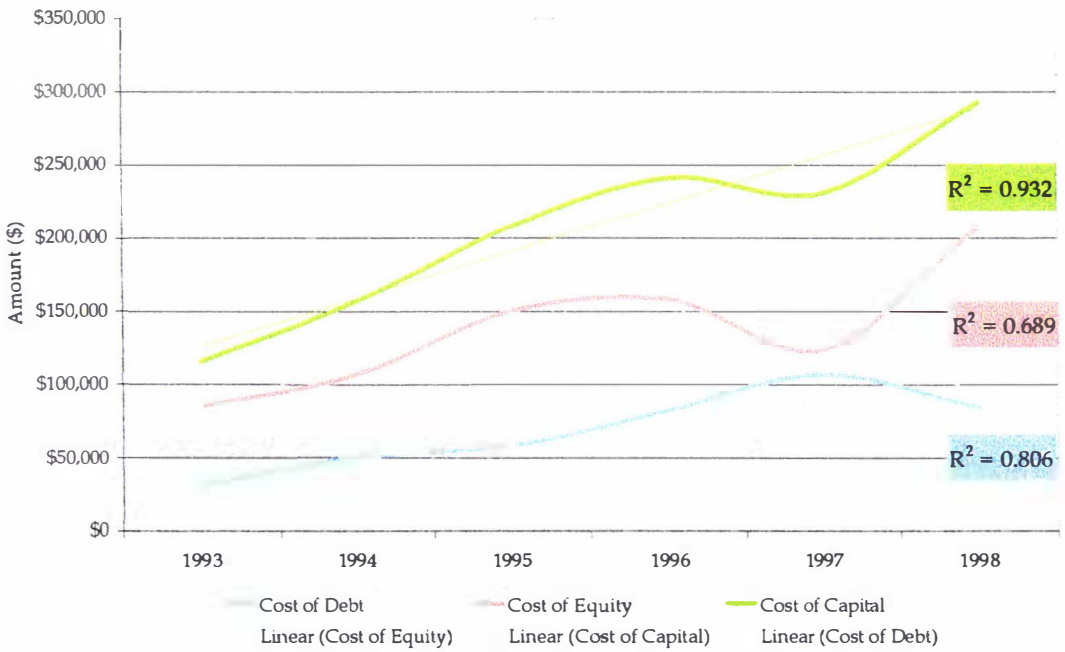

Figure 34 Cost of Capital Trend - Case Study Seven

The value created metric shows that reinvestment in the business was possible only during the first two years of the analysis so for the period of analysis $30,000 was reinvested in the business. Therefore over the last four years the operating profit level of the business has been insufficient to meet the funding costs of the business.

The productive value of the business exceeds the capital valuation in 1992-93 and 1993-94. From this point on, the capital value is less than the productive value. This reflects the disproportionate levels between the operating costs and the funding costs. The operating ratios of the business did not appear to be out of order and showed a strong operational business. However, the funding costs of the business are too high for the operating profit level and they appear to be increasing.

4.7.6 Summary:

The physical production performance of the farm is very strong and it would seem that the improved feeding management has been successful on the basis of both production and operational efficiencies.

Capital efficiency is high despite the large investment in plant and machinery. This can be interpreted in one of two ways either farm business is not over capitalised or by reducing the level of capital efficiency could be increased substantially.

The main issue on this farm is the cost of capital. The metrics of value created and net present value show that the business is not able to sustainably support the existing cost structures. The increasing level of net indebtedness also supports this, as net worth is decreasing while the asset value is stable. This also has implications for succession plans.

4.8 Case Study Eight:

4.8.1 Introduction:

Case farm eight operates a 169ha, 430-cow seasonal supply dairy farm. The farm was purchased in 1981-82 season and milked 114 cows. Additional land was purchased during the 1986-87, 1989-90 and 1996-97 seasons. The farm family comprises of the farming couple and seven children ranging in age from primary school to early twenties. The farm operates as a 50:50 partnership between the husband and wife. This has been the arrangement since the farm was purchased. A discretionary trust was set up three seasons ago and the trust is the owner of the land purchased in 1996-97. Three seasons ago, a herd manager was employed to relieve the husband from daily milking. His attention is now focused on the overall management of the farm and the specific tasks of calf rearing, relief milking and general farm maintenance.

The average rainfall received by the farm is 800mm and the soil type is sand. The sandy soils are prone to drying out in the summer and can be very wet in the winter/early spring period. The average Olsen P levels are 23ppm however sandy soils are prone to leaching so it is a constant struggle to keep the soil fertility level high. Potash is applied annually. The pH averages 5.8, which is a reduction from its initial level of 6.0. A policy of lime application over one quarter of the farm annually has begun. The soil types also make maintaining pasture species on the farm quite difficult, thus making regrassing a regular task. No fodder crops are grown on the farm and very little supplement is conserved on the farm.

Young stock remain on the farm until they are about six to seven months old, then they are grazed off the farm and this season 200 dry cows will be wintered off the farm. This is substantially higher than usual but has resulted from seasonal conditions which saw the herd dried off in mid April due to lack of feed cover on the farm and the milking herd loosing condition. The usual number is between 50-100 cows. The young stock are on a weight gain grazing system and the results are consistently good. All supplements, silage and balage, are purchased off farm.

4.8.2 Monitoring and Management Tools:

Pasture walks occur every 10-14 days and pasture levels recorded with either a plate meter or a pasture probe so that feeding levels and rotation lengths can be adjusted and the level of supplement calculated and budgeted for. Pasture management is considered one of the most important activities on the farm and the success of the farm is based on it.

Herd testing information is used for culling purposes through the identification of low producers and high cell count cows. The data is also used for general cow records. A production graph with monthly targets is formulated and actual monthly production is plotted against it. The graph is adapted for changes in cow numbers.

A consultant is employed as a sounding board on a one-to-one level and is also used as a source of new information. New information and technology is also obtained from sources such as discussion groups, Dairy Exporter, seminars and conferences. Dairy company newsletters are also used as well as the occasional liaison meeting.

The accountant prepares cash flow budgets after the farming couple collate and code the information for GST. Updated cash flows are received every two months and contain a comparison to the previous year. However, the only guide the couple have as to the success of the business is production and end of year cash balances. They find it frustrating that they have no identified KPIs to provide a more in-depth view of the business.

4.8.3 Mission Statement and Strategic Intent:

The researcher developed the mission statement from the information proved in the mission statement worksheet.

4.8.3.1 Mission Statement:

"To provide a stable and enjoyable lifestyle through operating a well run and efficient dairy farm while striving for self improvement and providing a positive and encouraging environment for our children and the community embracing the values of honesty, trust and loyalty. To work for God in helping others understand and share his purpose and love."

4.8.3.2 Strategic Intent:

To operate a profitable business that will provide for retirement and an off-farm lifestyle.

Achieve a rate of growth that will:

- ❖ Continue to provide a stable and enjoyable lifestyle.
- ❖ Provide sufficient returns to allow off-farm investments to occur.
- ❖ Allow the employment of a sharemilker.
- ❖ Reduce the need for the family's daily presence on the farm.
- ❖ Allow for the pursuit of leisure activities.

4.8.4 Goals:

Initially there appeared to be no overriding goals that were desired and there appeared to be some conflict between the farming couple in what they mentioned.

- ❖ A major goal already achieved is for the husband to remove himself from the dairy shed and the daily routine of milking. Both partners see this as very positive step.
- ❖ The farming couple would like to retain ownership of the farm for as long as possible through employing a 50% sharemilker or farm manager.
- ❖ Employ a competent sharemilker and move in to town within the next five years.
- ❖ Expansion of the farm is not a driving goal but if an opportunity arose then it would be considered. There is no sentimental attachment to the current farm so relocation would also be considered.

The wife considers the farm to be very isolating and constricting and would like to see her husband spend more time off farm so that he can meet more people, especially non-farmers! She does not find this as great an issue for herself as she is able to pursue off-farm interests and achieve personal interaction. With a young

family, many off-farm activities enjoyed by the couple were restricted but this is much less of an issue now with youngest child aged seven.

There is a major issue of what the husband does with his time, this issue is itself is a goal. A herd manager has been employed for next season and farm maintenance is up to date, with no driving issues at present. An idea that was suggested was to purchase a run-off block for heifers and dry cow grazing. This could potentially save on grazing fees and provide work for the husband. This operation would have to be economically feasible.

4.8.5 Business Analysis:

Total production has increased by an average of 5% per year (Table 46). This has been achieved predominantly through increased cow numbers. Herd size has grown by an average of 5% per year also. Per cow production has varied and per hectare has remained similar as herd size has increased in response to increased land area. Production is subject to seasonal variation as the farm is pasture based. The impact of seasonal effects is visible in Figure 35.

Table 46 Production Analysis for Case Farm Eight.

Production Analysis	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total Production (kg MS)	97,479	95,409	105,641	98,485	119,821	122,364
% change		-2.12%	10.72%	-6.77%	21.66%	2.12%
cow numbers	300	308	311	304	365	380
Per cow production	325	310	340	324	328	322
Per hectare production	750	734	813	758	740	755
Avg. price per kg MS	$3.58	$3.35	$3.42	$3.72	$3.29	$3.29
% change		-6.54%	2.16%	8.60%	-11.39%	0.03%

Farm equity averaged 65% for the six years of analysis with a peak of 72% for the first year (Table 47). The fluctuations are due to increased borrowings for additional land and personal assets. Net worth has increased consistently with an average annual increase of 2.81%. The value of land and buildings has remained constant to exclude capital gains. The equity growth discussed throughout this research is based on the contribution by the business.

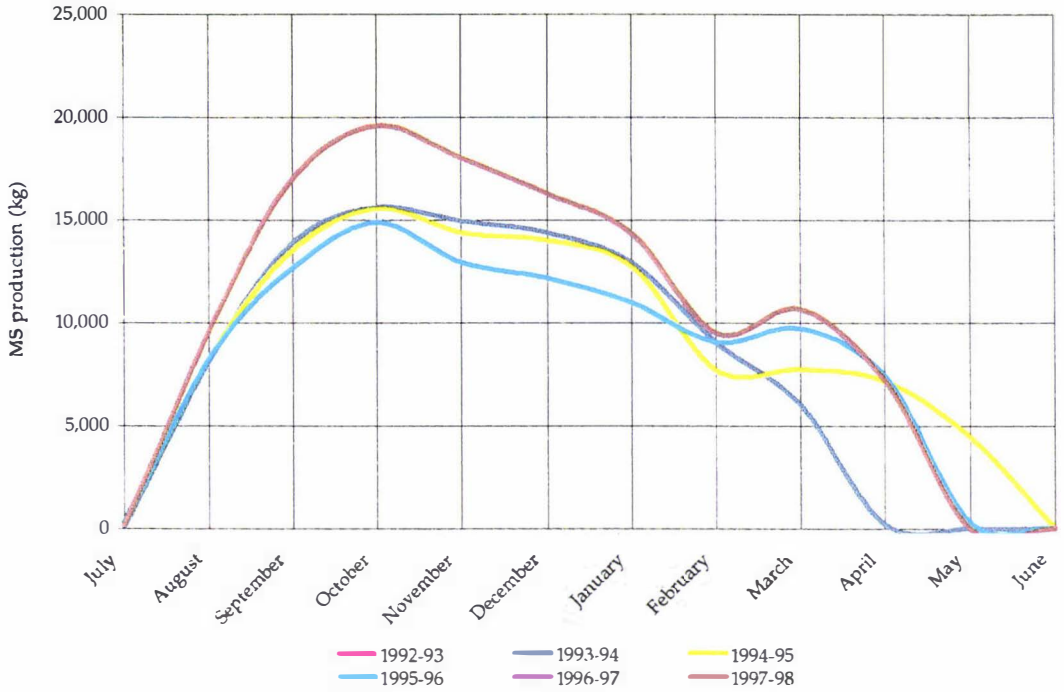

Figure 35 Milk Production Trends for Case Farm Eight.

The change in net indebtedness reflects core debt reduction and increases which in this case are attributable to capital purchases, land, which required additional funds (Table 47).

Table 47 Solvency Analysis for Case Farm Eight.

Solvency	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total assets	$1,551,307	$1,556,570	$1,562,439	$2,016,789	$2,030,699	$2,052,368
Debt:Equity (gearing)	38%	55%	46%	68%	58%	56%
Net worth	$1,120,852	$1,004,876	$1,067,182	$1,197,898	$1,287,146	$1,312,418
Equity	72%	65%	68%	59%	63%	64%
Equity Growth[17]		-11.54%	5.84%	10.91%	6.93%	1.93%
Net Indebtedness	$405,959	$535,588	$477,142	$787,642	$714,113	$710,556
Change in indebtedness	$28,839	-$129,629	$58,446	-$310,500	$73,529	$3,557
Debt Servicing:GFI	10.04%	11.62%	11.85%	11.20%	16.65%	14.22%
Debt Servicing:GFI (inclu P)	21.99%	15.93%	21.53%	11.20%	24.03%	22.02%

[17] Based on net worth

Debt servicing averaged 12.6% of GFI, this level is well within acceptable industry levels and there is scope for either increasing principal repayments or expanding with some additional debt. In all but one year the business is paying back principal money.

Cash farm cash operating expenses averaged 50.3% of GFI (Table 48). The increase in the monetary value of farm expenses has been partly countered by an increase in the GFI therefore the percentage difference is not as great as the monetary difference.

Table 48 Profitability Analysis for Case Farm Eight.

Profitability	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Gross Farm Income	$414,784	$367,366	$411,260	$414,224	$436,043	$446,257
Cash Farm Expenses	$178,129	$173,224	$209,279	$218,992	$238,735	$237,545
Cash Farm Expenses % GFI	43%	47%	51%	53%	55%	53%
Net Income	$216,788	$132,460	$136,680	$234,828	$139,763	$115,502
Return on Equity	14.04%	9.35%	9.16%	7.77%	7.31%	5.18%
EFS	$198,968	$136,642	$146,553	$139,471	$166,737	$131,452
Return on Assets	12.83%	8.78%	9.38%	6.92%	8.21%	6.40%
Operating Profit Margin	48%	37%	36%	34%	38%	29%
NOPAT	$129,993	$89,273	$95,749	$91,122	$108,936	$85,883
Capital turnover ratio	26.74%	23.60%	26.32%	20.54%	21.47%	21.74%

Average return on equity is 8.80%. The trend-line shows a strong declining pattern, as indicated by the regression coefficient, R^2=0.866. The average is relatively high and the decline can be related to the slightly declining trend in NFI, and to a lesser extent increasing equity.

The EFS shows substantial variation (Figure 36). This is largely a reflection of the changing levels in NFI and production variation due to seasonal influence, especially dry summers.

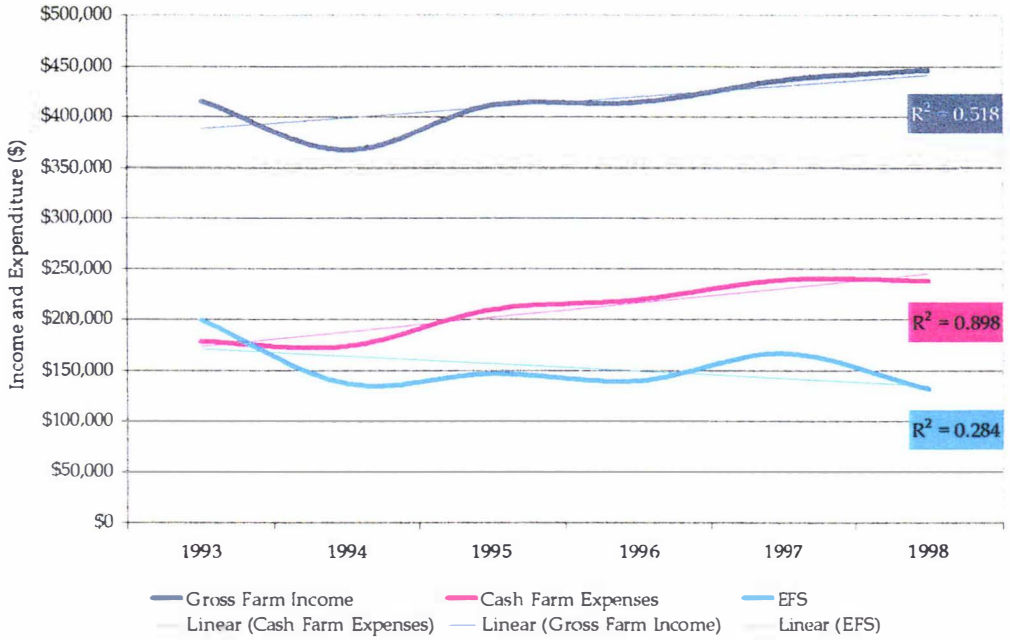

Figure 36 Income and Expenditure trends - Case study Eight

Operating profit margin averaged 37% (Table 48). This figure is strong, however the year to year variation indicates a declining trend (R^2=0.622). The operating profit margin is affected by EFS and GFI. The average capital efficiency level is strong at 23.5% but has declined over the period of analysis(R^2=0.573).

The cost of debt has increased in monetary terms (R^2=0.698) while the cost of equity has varied substantially (R^2=0.093). This variation influences the cost of capital for which can bee seen in Figure 37. The range in the cost of capital is reflected in the levels of the net present value (Table 49).

Table 49 Cost of Capital Analysis for Case Farm Eight.

Growth	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Cost of Debt	$27,206	$27,886	$31,849	$30,313	$47,432	$41,454
Cost of Debt (%)	6.32%	5.05%	6.43%	3.70%	6.38%	5.60%
Cost of Equity	$34,859	$47,922	$78,004	$34,692	$66,312	$36,238
Cost of Equity (%)	3.11%	4.77%	7.31%	2.90%	5.15%	2.76%
Cost of Capital	$62,064	$75,807	$109,852	$65,005	$113,744	$77,693
Cost of Capital (%)	4.00%	4.87%	7.03%	3.22%	5.60%	3.79%
Value Created	$67,929	$13,466	-$14,104	$26,117	-$4,809	$8,190
Net Present Value	$3,249,195	$1,833,069	$1,361,839	$2,827,059	$1,944,850	$2,268,714

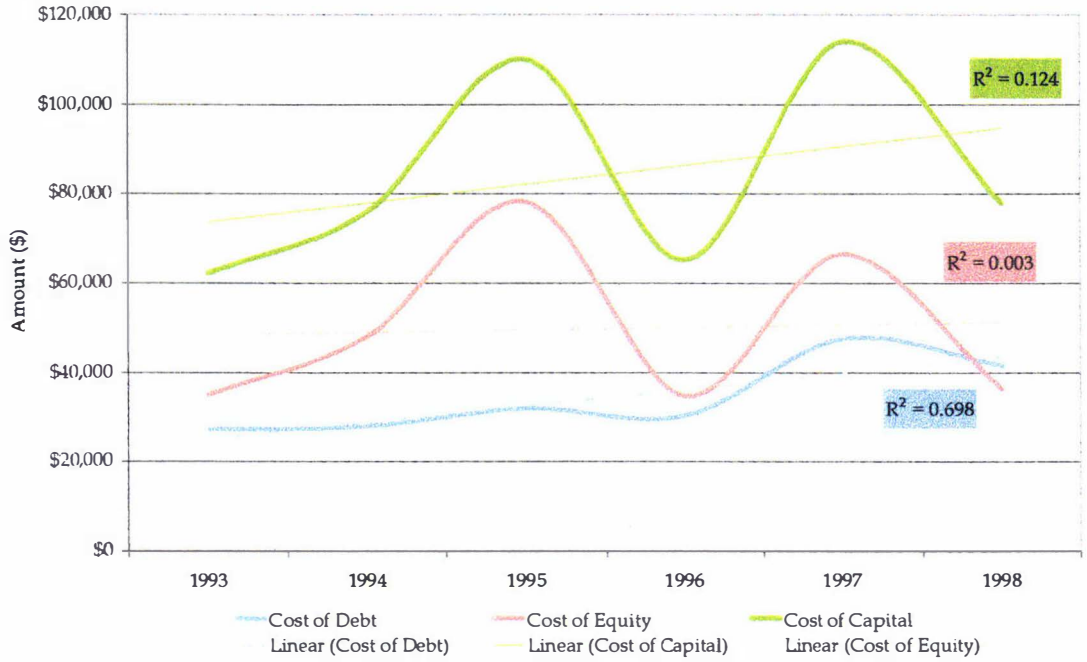

Figure 37 Cost of Capital trends for Case Farm Eight.

The Value Created metric shows that for four of the six years there were funds available for reinvestment therefore NOPAT was adequate to cover cost of capital. The total amount reinvested in to the farm business was $236,219.

The net present value metric for this business shows that only the 1994-95 and 1996-97 years have a productive value less than the capital asset value. This suggests that the farm's overall health is strong.

4.8.6 Summary

The farm business would most likely be able to support additional expansion, as there is scope with the debt servicing ability of the farm. Personal drawings may decrease as more children become independent and the difference may be used for additional principal repayments. Reducing debt will increase the level of net worth and reduce interest payments. This would reduce the cost of capital thus increasing the net present value, which currently matches the 1998 asset valuations.

Increasing costs is currently an issue as it impacts on the overall business performance, as does income variation, however the business' performance is quite strong and most likely capable of meeting the needs of the family's goals.

4.9 Case Study Farm Nine:

4.9.1 Introduction:

Case farm nine has been operating the current dairy farm for almost 13 years. Before purchasing the farm the couple were 50% sharemilking with 200 cows. The home farm is 32 ha and when purchased was part of an operational dairy unit but the dairy facilities were not being used. Upon purchase, the shed required redevelopment, the subdivision was redone and there was some minor work done on races as well as some minor additions.

An 11 ha run-off block was purchased about 10 years ago and eight years ago a 16ha lease block was acquired and amalgamated into the milking area. This block was part of a former dairy farm. The farm currently milks 125 cows and this number has remained reasonably constant over the last six years. There is a strong per cow production focus now as the farm is considered to be at its carrying capacity (120-130 cows) until additional land is available and the dairy expanded and upgraded. The dairy is currently a 12-aside herringbone. Production per cow over the last two seasons has been over 400kg milksolids. This is achieved through both pasture and maize silage. Maize silage was introduced to the farming system in the 1996-97, however supplement was purchased in the previous season causing cash imbalances. Feeding begins two weeks pre calving and continues for eight to ten weeks post calving at about 3 kg DM per head per day. This is however dependent on pasture covers and seasonal conditions i.e. wetness. Feeding maize silage appears to have also increased cow intakes. The aim is to fully feed stock and on-off grazing techniques are employed during wet springs to assist with this goal. Three years ago a consultant was employed to develop pasture skills and feeding/nutrition management. Through the guidance and encouragement of the consultant, a system of higher inputs was adopted.

The farm operates as a 50:50 partnership between husband and wife and this arrangement has been in place since the couple married. The farm family comprises the farming couple and their five children aged three to sixteen years. There is no succession plan for the farm, however there is no desire to see children take over the farm. Selling the farm is a very real option

The farm soil types are silt loams, which are prone to winter wetness though this problem is managed using two stand-off areas which are also suitable for feeding out supplements. Soil fertility levels on the milking area average Olsen P of 30 and the pH ranges between 5.8-6.0. They aim to apply 45-50 kg P/ha and 30 kg S/ha. This is based on soil tests, which are done every couple of years. Lime is applied in a 5-6 year cycle at the rate of 1tonne per acre. The average rainfall is about 1,440mm (60inches).

4.9.2 Monitoring and Management Tools:

Pasture management is a key to the business' success. Pastures are scored regularly and feed budget is prepared and monitored. During the autumn monitoring and updating of the budget occurs every 10 days. An annual feed budget is prepared for the coming season.

The farming couple is comfortable working with the computer and software use a farm tracker programme for recording pasture and fertiliser information. Bookkeeping is done using a cash manager programme. Accounts are updated monthly with a goal of fortnightly updates. Discretionary spending is monitored tightly and AB costs have been quite high in pursuing a breeding interest, however they are to be cut back for the coming season. Herd testing occurs six times per year however next year this will be reduced to four times. The couple find that as well as providing production data, the information maintains their interest in the animals. The information is also used for decisions on culling and dry cow treatment.

Through the consultant the couple had access to information provided by UDDER® and Cam Dairy®, however they felt that much of the information they already recorded themselves. The consultant's input will be reduced to occasional farm visits so that the farming couple can test the knowledge and skills they have developed over the last three years.

The accountant is used for tax and investment analysis. The bank manager comes on to farm about once a year and while the couple has a reasonable relationship with the him, they have no allegiance to bank. Information is also sourced from the local LIC discussion group and attendance at field days.

Business success is based on the ability to pay principal and support $35,000-$40,000 of drawings as well as having cash reserves to replace capital when required. End of year statements compared to beginning of year to assess principal repayments and the cash balance. There are no other specific financial measures that are used to measure performance, and while EFS is not measured, they feel it has some value for comparing between years and farms.

4.9.3 Mission Statement and Strategic Intent:

The farming couple developed their mission statement following the completion of the value identification worksheet.

4.9.3.1 Mission Statement:

"To build financial security for us and our family through high production of milk and high quality by-products."

4.9.3.2 Strategic Intent:

To operate a profitable business to meet the objectives of:

1. Maintaining and improving lifestyle.
2. Increasing net worth.
3. Maintaining an enjoyable work environment job satisfaction.
4. Supporting the employment of a full time labour unit

Ensure an enjoyable and supportive environment for our family.

4.9.4 Goals:

The farming family has identified the following goals:

- To remain on their small unit for the convenience of location i.e. close to schools, and town.
- Employ labour by 2003 to reduce the husband's time commitment in the shed.

- ❖ Generate a level of surplus to achieve a level of debt servicing of 30% of GFI per year.
- ❖ Ensure a minimum level of drawings, $35,000+, is always available.
- ❖ Reduce dependence on overdraft as a source of credit, i.e. seasonal buffer only not as permanent debt. Previously the overdraft has been used as a permanent source of finance.
- ❖ Maintain job satisfaction through having well maintained assets.
- ❖ Create greater flexibility to pursue recreational activities as a family through the employment of staff and having sufficient drawings.
- ❖ To provide children with as many opportunities as possible for the development of their futures.

4.9.5 Business Analysis:

Production has increased by 6.47% per year over the last six years (Table 50). The increase in production is due to improved per cow production and to a lesser extent, increased stocking rate. Cow numbers are currently at their peak limit based on the farm family's limits and the current shed size.

Table 50 Production Analysis for Case Farm Nine.

Production Analysis	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total Production (kg MS)	40,167	40,226	45,697	43,726	48,188	53,044
% change		0.15%	13.60%	-4.31%	10.20%	10.08%
cow numbers	118	111	122	123	120	125
Per cow production	340	362	375	355	402	424
Per hectare production	873	874	993	951	1,048	1,153
Avg. price per kg MS	$3.55	$3.41	$3.33	$3.66	$3.39	$3.30
% change		-4.01%	-2.34%	9.92%	-7.43%	-2.78%

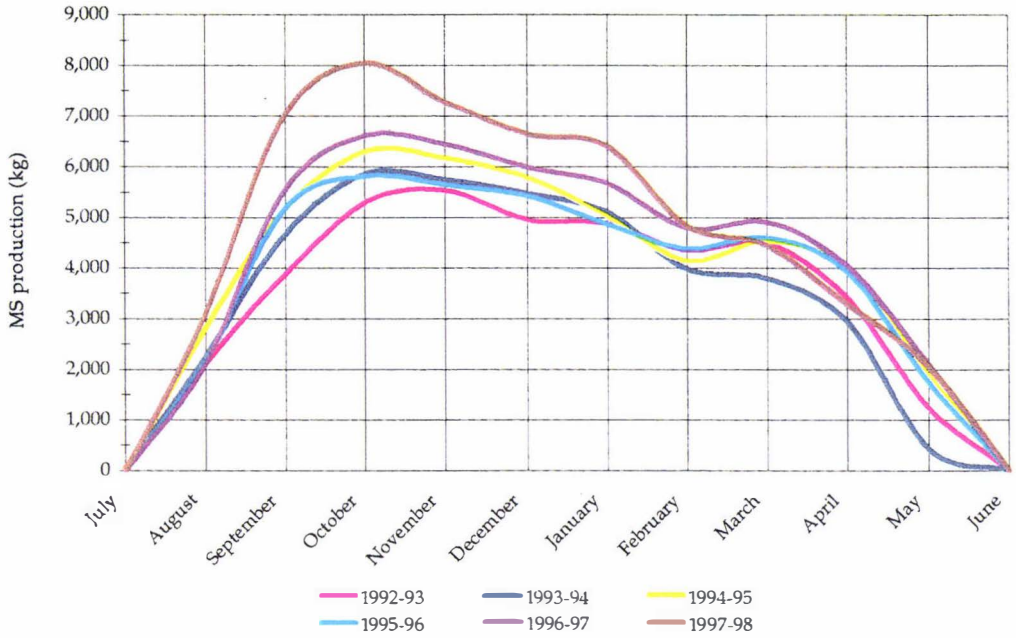

Figure 38 Milk Production Trends for Case Farm Nine.

The level of equity has remained constant over five years at 64% increasing in the sixth year to 69%, while net worth has been increasing at an average annual rate of 2.89% (Table 51).

Table 51 Solvency Analysis for Case Farm Nine.

Solvency	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total assets	$768,931	$788,821	$792,015	$780,387	$782,039	$832,444
Debt:Equity (gearing)	55%	59%	56%	57%	53%	44%
Net worth	$495,488	$494,912	$506,482	$498,153	$509,636	$577,204
Equity	64%	63%	64%	64%	65%	69%
Equity Growth		-0.12%	2.28%	-1.67%	2.25%	11.71%
Net Indebtedness	$258,224	$281,573	$271,723	$270,869	$252,505	$236,363
Change in indebtedness	-$27,602	-$23,349	$9,850	$854	$18,364	$16,142
Debt Servicing:GFI	14.11%	14.93%	15.29%	18.04%	15.19%	14.94%
Debt Servicing:GFI (inclu P)	14.11%	14.93%	42.73%	29.30%	15.19%	25.80%

Net indebtedness increased in the 1993-94 year, however this increase matched with an increase in assets (Table 51). Since this point, net indebtedness has been decreasing. Debt servicing as a percentage of GFI averages 15.42%. These levels are well within acceptable levels and would suggest that some expansion could be

accommodated if additional funding was required. It is possible however that while debt servicing as a percentage of GFI is not an issue, for the size of the farm and the family, the level may be too high because of the higher level of drawings required.

Cash farm expenses remained constant for the first three years of the analysis (Table 52). Increases occurred in 1995-96 and have steadily occurred as a dollar amount however they have remained at a constant percentage of GFI. This is partly a reflection of the increased use of supplements, which must be purchased. As a percentage of GFI, cash farm expenditure has gone from 35% up to 48%. This step up in expenditure would appear to be due to a change in management practices with the consultant advocating higher supplementary feeding levels.

Table 52 Profitability Analysis for Case Farm Nine.

Profitability	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Gross Farm Income	$168,838	$169,144	$184,332	$177,675	$177,746	$199,156
Cash Farm Expenses	$59,876	$56,365	$64,334	$83,423	$87,581	$94,959
Cash Farm Expenses % GFI	35%	33%	35%	47%	49%	48%
Net Income	$87,255	$79,196	$78,903	$50,117	$54,994	$65,372
Return on Equity	17.61%	16.00%	15.58%	10.06%	10.79%	11.33%
EFS	$86,074	$79,452	$82,080	$57,173	$56,992	$70,116
Return on Assets	11.19%	10.07%	10.36%	7.33%	7.29%	8.42%
Operating Profit Margin	51%	47%	45%	32%	32%	35%
NOPAT	$61,898	$57,136	$59,026	$41,115	$40,984	$50,422
Capital turnover ratio	21.96%	21.44%	23.27%	22.77%	22.73%	23.92%

Return on equity averaged 13.56%, again a distinct step can be seen in level of this ratio with a drop of about five-percent. The level of net income effects this ratio most as the level of equity is relatively constant.

The EFS averaged $71,981, however from the 1995-96 year the EFS dropped significantly. This appears to be related to the change in management practices (Figure 39).

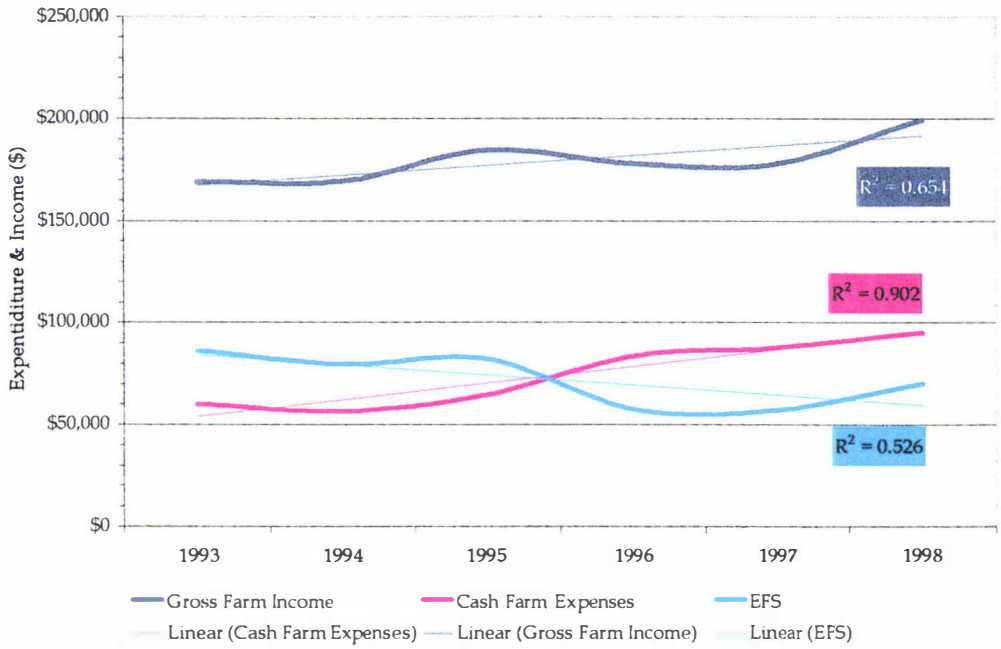

Figure 39 Income and Expenditure trends for Case Farm Nine.

Return on assets averaged 9.11%. Before the 1995-96 season the ROA was above 10% but the drop in EFS has caused the ROA to also decline. The average operating profit margin was 40.32% (Table 52); the change in management policy has caused a reduction in the operating profit of about 15% (R^2=0.785) . This is a strong downward trend. However, the lower of these levels is still quite good but could be easily compromised through increased costs or a drop in income. The capital turnover ratio averaged 22.68% and this level has been very consistent.

The cost of debt has shown a slight increasing trend (R^2=0.477) while the cost of equity has fluctuated (R^2=0.068) (Figure 40). The calculation basis and the link to cow numbers for the reward for unpaid management and labour means that this farm will always have a relatively high cost of equity. The average cost of capital for the business is 6.30%.

Table 53 Cost of Capital Analysis for Case Farm Nine.

Growth	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Cost of Debt	$17,129	$18,162	$20,263	$23,052	$19,415	$21,390
Cost of Debt (%)	6.26%	6.18%	7.10%	8.17%	7.13%	8.38%
Cost of Equity	$28,719	$29,762	$34,753	$18,239	$30,038	$38,571
Cost of Equity (%)	5.80%	6.01%	6.86%	3.66%	5.89%	6.68%
Cost of Capital	$45,848	$47,924	$55,016	$41,291	$49,453	$59,961
Cost of Capital (%)	5.96%	6.08%	6.95%	5.29%	6.32%	7.20%
Value Created	$16,050	$9,212	$4,010	-$177	-$8,468	-$9,538
Net Present Value	$1,038,117	$940,446	$849,746	$777,050	$648,121	$700,022

The amount of reinvestment in the farming business for the six years of analysis was $11,089 though Table 53shows that during the last three years there was increasing divestment in the business (R^2=0.978). Without a significant increase in NOPAT the value created ratio is likely to continue to decline in the future.

The net present value of the farm shows the productive worth declining due to the increased cost structure and declining NOPAT in combination with the increasing cost of capital.

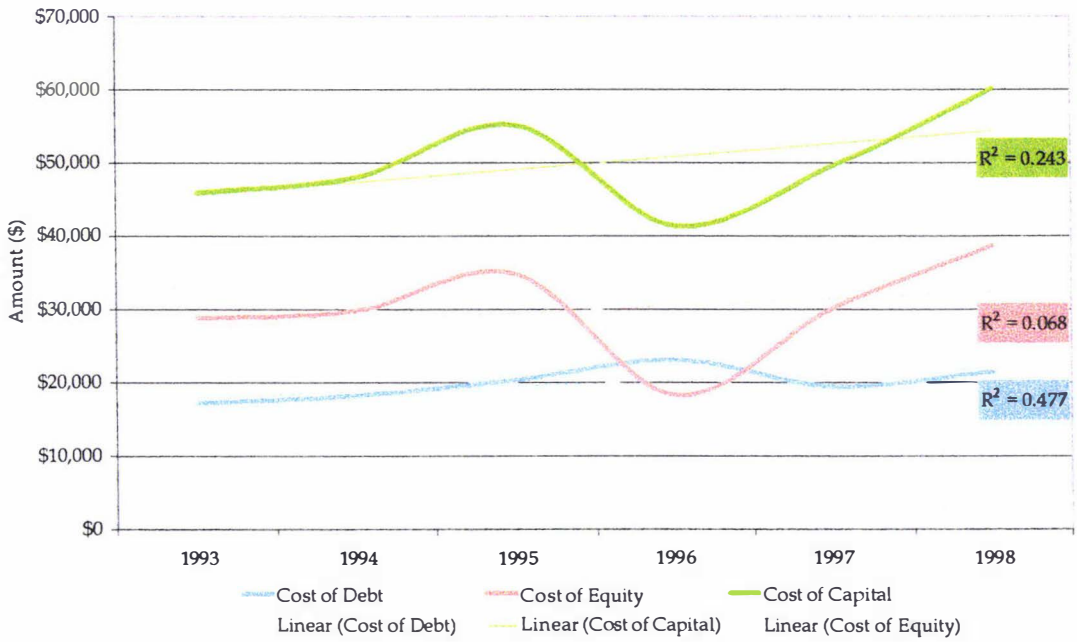

Figure 40 Cost of Capital trends for Case Farm Nine.

4.9.6 Summary:

Change in management policy has seen expenses increase by about 15% with minimal changes to income. Although production has increased as a result of the change this is not true for other indicators. ROE and ROA have decreased significantly as has the operating profit margin. The distinction between the two management systems is very stark as can be seen in the difference between income and expenditure in Figure 39. If not controlled then the sustainability of the farm business will become increasingly difficult to maintain. The increase in NOPAT in year six is a positive sign and needs to continue.

If these trends as identified above continue to occur then many of the goals identified by the farm family will be unattainable. The negative trend in the value created metric suggests that the level of debt servicing will not be able to be increased nor the employment of labour as there will be insufficient income available to pay for it. If job satisfaction is achieved through well maintained assets then this also is at threat as there is currently no investment in the farm business.

4.10 Case Study Farm Ten:

4.10.1 Introduction:

Case farm ten is 120ha, 112ha effective area, seasonal supply dairy farm currently milking 340 cows. The husband's parents purchased the farm in 1964. They operated the farm until 1974 when it was then leased out. The husband took over the management of the farm in 1983, leasing it from his parents. A 20 ha run off block was purchased in 1993 and another 27ha runoff in 1996. In 1998, the 1993 purchased block was sold to enable the purchase of 40 ha of milking land adjoining the dairy farm. The husband's parents have recently informed the farming couple that they want to sell them half of the dairy unit. The farm business is currently operated as a partnership between the husband and wife. The wife was professionally employed as a teacher/principal but moving to the farm and having two young children has put her career on hold.

The farm business employs a labour unit. Staff normally stay on the farm for a 12 to 24 month period before moving on. This fits into the couple's interest of introducing and providing good training opportunities for new entrants to the industry.

Calves are weaned and moved out to the run off block, normally the 1st November, and stay there until April. From the 1st May they go off on grazing which is set at a weekly fee plus a liveweight gain incentive.

Potassium leaches very readily from the soil due to the 2,110mm annual rainfall therefore annual applications of potassium are required.

Table 54 Soil Fertility and Nutrient Audit for Case Farm Ten.

	Kg N/ha	Kg P/ha	Kg K/ha	Kg S/ha
Soil Test (1995)		Olsen P 53	4 – 10	7, org S 18
Applied	80	70-75	70-80	92[18]
Removed as milk etc	40-80	60	86	78

[18] Applied sulphur based on phosphorus application being straight superphosphate

4.10.2 Monitoring and Management Tools:

Pastures are monitored regularly through visual appraisal and the husband is very disciplined with his grazing management, "there are no winter sleep-ins on this farm", but no formal monitoring occurs. Knowledge of accounts and financial records is quite low and professionals, accountant, consulting officers and dairy company staff, are employed to do the recording. There is no farm computer.

A new accountant was employed for the 1997-98 season and his services extend to comparative analysis between his clients and a detailed report of the movement in cash flows and how they compare to others. The farming couple considered this very valuable as they have no historic benchmarks due to the farm being leased. The husband is also a member of a local discussion group, which employs a private consultant to facilitate the group.

Production is tracked through the milk statement and the production graphs sent out by the dairy company.

4.10.3 Mission Statement and Strategic Intent:

The researcher developed the mission statement from the information proved in the mission statement worksheet.

4.10.3.1 Mission Statement:

"To provide a good standard of living for our young family and financial independence through the production of high quality milk while also providing a good training environment for new people entering the industry."

4.10.3.2 Strategic Intent:

Our aim is to operate our farming business so that it will provide:

Financial success through the production of high quality milk and meat products.

A rate of business growth that ensures:

1. A desired standard of living.

2. Financial independence.

3. A comfortable retirement for the farming couple.

4. Supporting the training and employment of competent and reliable staff.

The business remains in the district's top 10% for production and financial performance.

A lifestyle that provides opportunities for leisure and personal development and growth for all family members.

4.10.4 Goals:

4.10.4.1 Farm goals:

- Buy the 80 ha from parents outright.
- Source land, preferably lease, to graze the heifers to gain more control in their planning to enable better decision making,.
- Reduce principal however, this not expected to happen in the immediate future.
- Employ labour capable of managing the farm with minimal supervision so that personal and family time allocations can be increased, but still only one labour unit.
- Ensure that the farm remains in the top 10% of the district on both a production and financial basis.

4.10.4.2 Family and Personal Goals:

- Develop a better understanding of each other's roles on the farm. This is especially important for the wife as she feels there is no delineation between her farm work and family work because everything is jumbled together, therefore it is difficult to see her farm input. Creation of a separate office area might alleviate this problem as the farm and family can be separated as well as a clear allocation of tasks and self-discipline.

- Balance farm and family better through compromise i.e. fewer 12 hours days worked by husband through employing capable staff.

- Ensure that time is made for the children to get to know their grandparents while both couples are alive and living close by.

- Renovate the new house.

- The wife has an issue with the use of her time, especially once both children are at school. She is concerned that she will be unable to progress with her teaching career because of her time spent out of teaching and a lack of formal qualifications. Other issues raised were the distance of schools and the travel time. She also fears that returning to full time work may have a negative effect on the household and business.

- The husband is also concerned about what he will do with his time once a herd manager is employed and the level of repairs and maintenance is minor.

4.10.5 Business Analysis:

Production has increased over the six years by an average of 5% per year, which is primarily due to increased per cow production (Table 55). Production per hectare has increased by about 6% per year. The production graph presents the seasonal milk flows and the variation that has and can occur (Figure 41). Milk price exhibits an average annual decrease of 1.69%.

Table 55 Production Analysis for Case Farm Ten.

Production Analysis	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total Production (kg MS)	63,397	62,442	69,791	70,294	80,525	80,400
% change		-1.51%	11.77%	0.72%	25.60%	-8.93%
cow numbers	210	230	242	237	235	234
Per cow production	302	271	288	297	343	344
Per hectare production	792	781	872	879	1,007	1,005
Avg. price per kg MS	$3.34	$3.66	$3.04	$3.65	$3.42	$3.31
% change		9.84%	-17.14%	20.17%	-6.17%	-3.42%

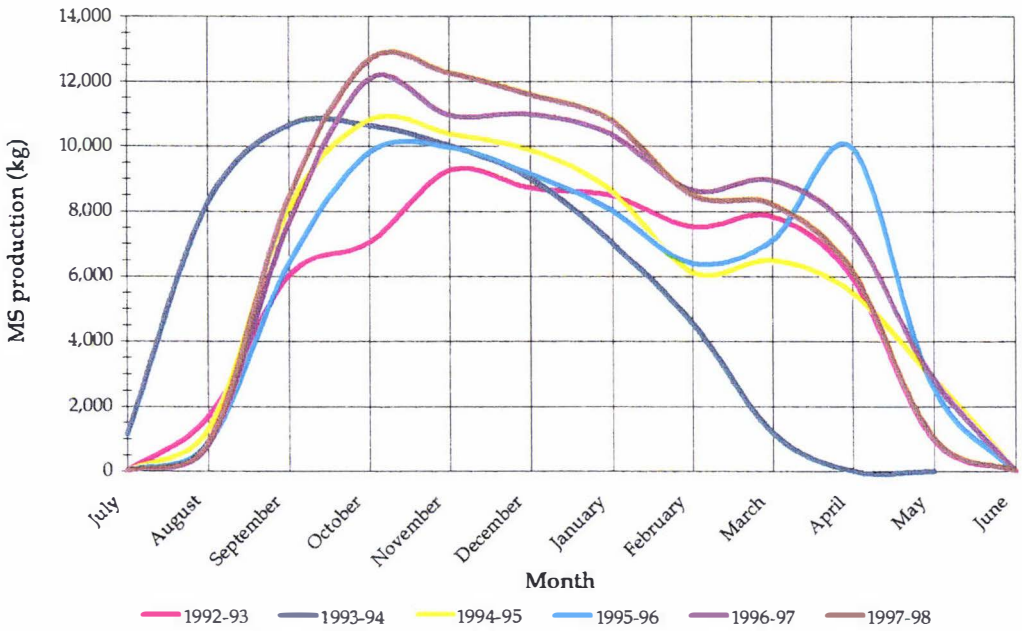

Figure 41 Milk Production Trends - Case Study Ten.

Equity levels remained stable until the purchase of land in 1996-97, which resulted in a 20% drop in equity (Table 56). This was because the total purchase price of the land had to be borrowed. The change in equity was also affected by the difference in the land purchase price and the current valuation of the property; a large reduction in cattle numbers reduced the livestock value by about $20,000.

Net worth has increased at an average annual rate of 10.10% (Table 56)., this is a very high level and demonstrates strong growth. The challenge will be maintaining this level as more of the dairy platform is purchased. The change in net indebtedness reflects the farming couples desire to reduce debt and increases are directly related to additional borrowings for capital purchases.

The level of debt servicing has been consistently high and is largely due to rent paid to the parents for leasing the milking platform. The rent equates to 15,750 kg MS multiplied by the current pay-out. However, when the milking platform is purchased some of the rent will be exchanged for interest payments. This level of debt servicing is high and will most likely influence the attainment of additional borrowings.

Table 56 Solvency Analysis for Case Farm Ten.

Solvency	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Total assets	$413,322	$439,660	$455,577	$521,157	$681,424	$814,436
Debt:Equity (gearing)	32%	25%	23%	27%	72%	47%
Net worth (Owner's Equity)	$313,647	$351,232	$369,577	$408,767	$396,782	$553,139
Equity	76%	80%	81%	78%	58%	68%
Equity growth rate		10.70%	4.96%	9.59%	-3.02%	28.27%
Net Indebtedness	$75,106	$58,480	$37,470	$26,126	$214,787	$213,648
Change in indebtedness	-$103,565	$16,626	$21,010	$11,344	-$188,661	$1,138
Debt Servicing:GFI	24.47%	20.91%	25.05%	25.73%	26.62%	24.26%
Debt Servicing:GFI (inclu P)	24.47%	20.91%	25.05%	34.44%	26.62%	33.49%

The GFI varies but is generally increasing (R^2=0.625), costs are also increasing (R^2=0.389) but less steeply (Figure 42). The results are slightly misrepresentative because the 1996-97 year is a 14-month year to accommodate a change in the balance date.

Table 57 Profitability Analysis for Case Farm Ten.

Profitability	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Gross Farm Income	$233,952	$277,290	$238,808	$291,351	$311,753	$297,472
Cash Farm Expenses	$99,219	$119,600	$127,621	$128,424	$175,465	$124,174
Cash Farm Expenses % GFI	42.41%	43.13%	53.44%	44.08%	56.28%	41.74%
Net Income	$90,421	$106,170	$47,755	$88,593	$80,412	$98,406
Return on Equity	20.46%	22.04%	4.74%	14.43%	6.99%	12.50%
EFS	$121,415	$135,392	$77,339	$133,930	$134,021	$141,311
Return on Assets	29.38%	30.79%	16.98%	25.70%	19.67%	17.35%
Operating Profit Margin	52%	49%	32%	46%	43%	48%
NOPAT	$96,730	$116,112	$47,557	$136,380	$97,081	$136,337
Capital turnover ratio	56.60%	63.07%	52.42%	55.90%	45.75%	36.52%

ROE is extremely high, average 13.53%, and is a reflection of the farming business not owning the milking platform therefore the amount of capital invested in the business is very low in proportion to income generation (Table 57).

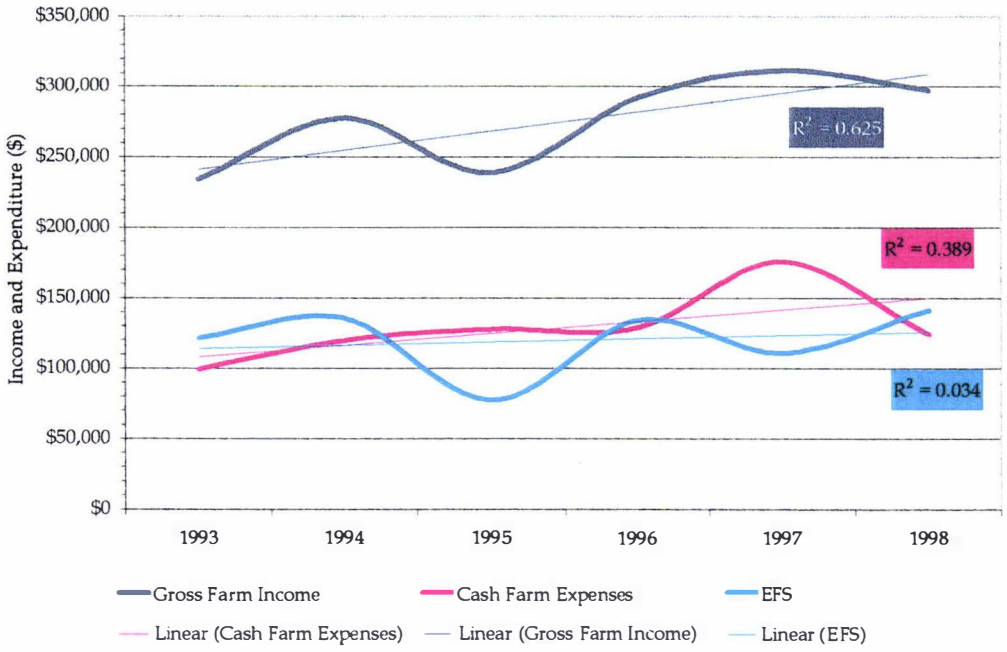

Figure 42 Income and Expenditure trends - Case Study ten.

The level of EFS is very consistent with the exception of the 1994-95 year (Figure 42). The level of EFS is also very high which is reflected in the operating profit margin, which averages 44% (Table 57). ROA for the business is extremely high, averaging 22.7%. Again, this reflects the low level of investment compared to income generation. The capital turnover ratio is extremely high but again is due to the relatively low level of investment in the business.

The cost of debt a percentage of total liabilities is extremely high because of the high rental payments and the low level of liabilities (Table 58). There is a slight increase in the cost of debt (R^2=0.678). The cost of equity has fluctuated but is increasing slightly (R^2=0.524). There are two years where the cost of equity is negative, which is in part due to cash drawings being less than the unpaid management and labour allowance. Substantial amounts of off-farm funds were also introduced (off-farm wages and dividend pay-outs) during this time.

Table 58 Cost of Capital Analysis for Case Farm Ten.

Growth	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98
Cost of Debt	$42,746	$43,289	$44,679	$55,977	$61,967	$53,880
Cost of Debt (%)	42.89%	48.95%	51.95%	49.81%	21.77%	20.62%
Cost of Equity	-$9,881	$839	$18,673	$5,190	-$9,769	$7,087
Cost of Equity (%)	-3.15%	0.24%	5.05%	1.27%	-2.46%	1.28%
Cost of Capital	$32,865	$44,128	$63,353	$61,167	$52,198	$60,967
Cost of Capital (%)	7.95%	10.04%	13.91%	11.74%	7.66%	7.49%
Value Created	$57,799	$71,984	-$15,796	$75,213	$21,590	$75,370
Net Present Value	$1,140,229	$1,156,860	$341,986	$1,161,986	$963,282	$1,821,273

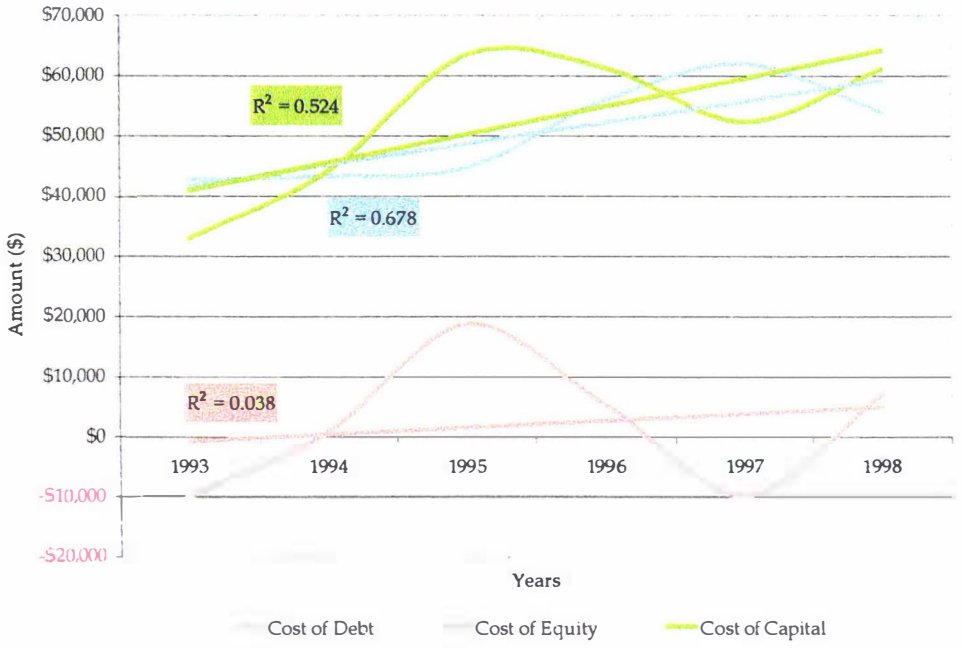

Figure 43 Cost of Capital trends - Case Study ten.

The value created metric shows a high level of reinvestment and asset appreciation in the business with the exception of the 1994-95. In this year, the NOPAT was very low due to a combination of reduced income and increased farm operating expenditure. A total amount of $286,661 was reinvested in the business over the analysis period (Table 58). The net present value of the business show a productive value significantly greater than the capital value which is a reflection of the high operating profit and NOPAT. However, this figure is of minimal use, as the milking platform is not included in the assets.

4.10.6 Summary:

This farm business is very strong in its performance as demonstrated in the performance indicators. However, because the business does not own the milking platform it must ensure that it is in a position to take over and fund ownership when the husband's parents wish to sell. The parents have indicated that they want to sell half of the milking platform (40ha). This will put the business under pressure as it has just purchased a block of land through selling a runoff block and increased borrowings. The level of equity and the low level of fixed assets has the potential to create difficulties for gaining additional borrowings unless they are guaranteed. Alternative business associations may have to be developed with the parents to allow the transfer of the milking platform to occur.

Another issue that faces the farm is the likelihood of an increasing cost of equity, especially as the children get older. At its current performance, the business will be able to support a higher cost of equity and some increase in the cost of debt.

4.11 The Outcomes:

4.11.1 Case study One:

The goals identified by this couple were both long-and short-term. Short-term goals were characterised as involving lifestyle and creating a supportive family environment, while long-term goals involved activities post retirement. However, despite these goals there is no structured plan to achieve the goals identified. The relevance of the operating measures in the business analysis is unclear as the farmer "hides" as much capital and personal expenditure in his farm working costs as he is able to for taxation purposes. The researcher based all calculations on the taxation accounts. The distinction between the operational and the funding parts of the business is therefore blurred. Despite this, the farmer believes he has a good understanding of his operating performance.

The concept of the cost of funding, in particular the cost of equity, was not well understood by the couple. Nor was there any recognition that a continuing negative value created metric indicated an unsustainable farming policy. This may in part be because the couple are satisfied with the level of drawings removed; therefore, it is not an immediate issue! The husband strongly indicated that the status quo is sufficient and that change is unlikely to occur.

Value and goal conflict was identified in the areas of farm business expansion, time away from the farm, having a country lifestyle, and involving family members in the business. The wife's knowledge and understanding of business issues is very poor: the husband makes all of the business decisions. The wife has strong views on the industry trend of increasing farm size and is opposed to increasing the business, but does not understand the relationships associated with scale. In contrast the husband claims to understand the related issues and sees that expansion is an inevitable process if the business is to remain sustainable in the long-term. The other conflicting issue concerns the importance of "country lifestyle". The husband considered this to be of low importance however the wife, from a non-farming background, has made this a focus of her life. It is also evident from this that the mission statement, constructed with the help of the researcher, reflects the wife's values as she filled out the value worksheet.

The lack of planning and strategy became evident when attempting to identify objectives for the balanced scorecard. The production objectives, for the internal business perspective of the scorecard, were identified with relative ease, as were some of the financial objectives. The customer perspective had received minimal consideration, as these dairy farmers do not perceive themselves to have customers. They regard milk quality, in general, as an imposition placed on them by the dairy company. Quality issues appeared only to be considered because of the financial penalties incurred in not meeting standards. The farmer saw opportunities to improve both the quality and profitability of the beef herd through more timely liveweight gains. The learning and growth perspective of the business strategy also received little attention: staff are not employed on the farm but the farmer does attend discussion group and uses a consultant to keep abreast with farming developments.

The balanced scorecard for this farm reflects the difficulty in eliciting objectives for the "consumer" and "learning and growth" components. The lag and lead indicators used by this farmer reflect the measures that the farmer considers he already records, despite their narrow focus. The farmer seemed indifferent to the concept and use of the balanced scorecard. A noticeable change in the farmer's behaviour at this point probably suggests that the farm business analysis pushed the farmer beyond his "comfort zone". Information was presented to him that he was either unaware of and did not understand, or was aware of but wanted to ignore. The farmer claimed that the farm would be debt free within the next ten years despite the presented information. The exercise seemed to be more of a favour to the researcher. Thus while the farmer considers he has a business plan in his head it is poorly formatted and articulated.

The balanced scorecard for this farm represents a framework for the development of a business strategy. Many strategic objectives were identified yet the indicators used by the farmer represent only operational and tactical management.

Table 59 Mission Statements and Strategy for Case Farm One.

Vision & Mission: *"To operate a productive farm that is able to support high living standards through increased production of high quality milk. To have financial security and enjoyment in our lives and the freedom to share our time with the community, while maintaining our strong family relationship."*

	Strategic objectives	Strategic Measures	
		Lag Indicators	Lead Indicators
Financial	• Reduce Debt. • Maintain and improve lifestyle • Generate cash surpluses. • Business growth.	• Farm working expenses as % GFI.	• Monitor cost structure. • Refinance where appropriate. • Actual versus budget.
Consumer	• Meet quality standards of dairy company • Improve marketing of beef herd	• Somatic cell count below 200,000 mid season.	• Plant hygiene policy. • Identify customer requirements for beef stock
Internal	• Maximise pasture growth and utilisation. • Improve cow nutrition. • Improve genetic merit of stock. • Maintain resources.	• MS Production • Herd test data.	• Herd BW. • Replacement rate. • Pasture covers pre and post grazing.
Learning & growth	• Improve knowledge in the area of cow nutrition.	• Attend discussion group.	• Use consultant

4.11.2 Case Study Two:

This farming couple did not have well defined goals other than to increase disposable income. They did however clearly articulate their values and a mission statement was able to be developed by the researcher. The mission statement was accepted after a few modifications and the couple was satisfied that it represented their overall goal. The value and goal statements did not conflict with each other. When explaining the business analysis the husband strongly disagreed with the separation of capital gains from the business analysis. It was explained that it was separated to look at the dairying business' performance alone as this is the area that farmers can control whereas capital gains are subject to market vagaries. While the wife claimed to understand and accepted this reasoning the husband continued to believe that the analysis was flawed because capital gains was not included. Another

issue that needed to be addressed in the business analysis was the introduction of approximately $208,000 of funds over the study period, as this had implications on the results. The husband was unaware of this money and was not able to provide the researcher with any assistance as to its origins or purpose. In general, the level of understanding of the business was low, and the concept of the business comprising two sectors, operating and funding, and how they are linked was not understood.

Because of the broadness of the couple's goal, "increase disposable income", the researcher tried to elicit what actions the couple could put in place to achieve it. However, when this was attempted the husband was unable to break down the goal into units that would assist in reaching the overall target. The researcher had developed a suggested goal hierarchy (Figure 44) for the couple. However, all components of the hierarchy required monitoring that did not happen on the farm and no desire was expressed in developing such monitoring systems. The couple had mentioned that for the 1999-2000 season they would be taking over the bookkeeping for the farm. Yet, despite having no bookkeeping experience, the husband did not consider it necessary to gain some formal training in either bookkeeping techniques or the software package to support this. The wife indicated that she would be interested in undertaking some formal training in this area but is currently involved in studies for her own professional development.

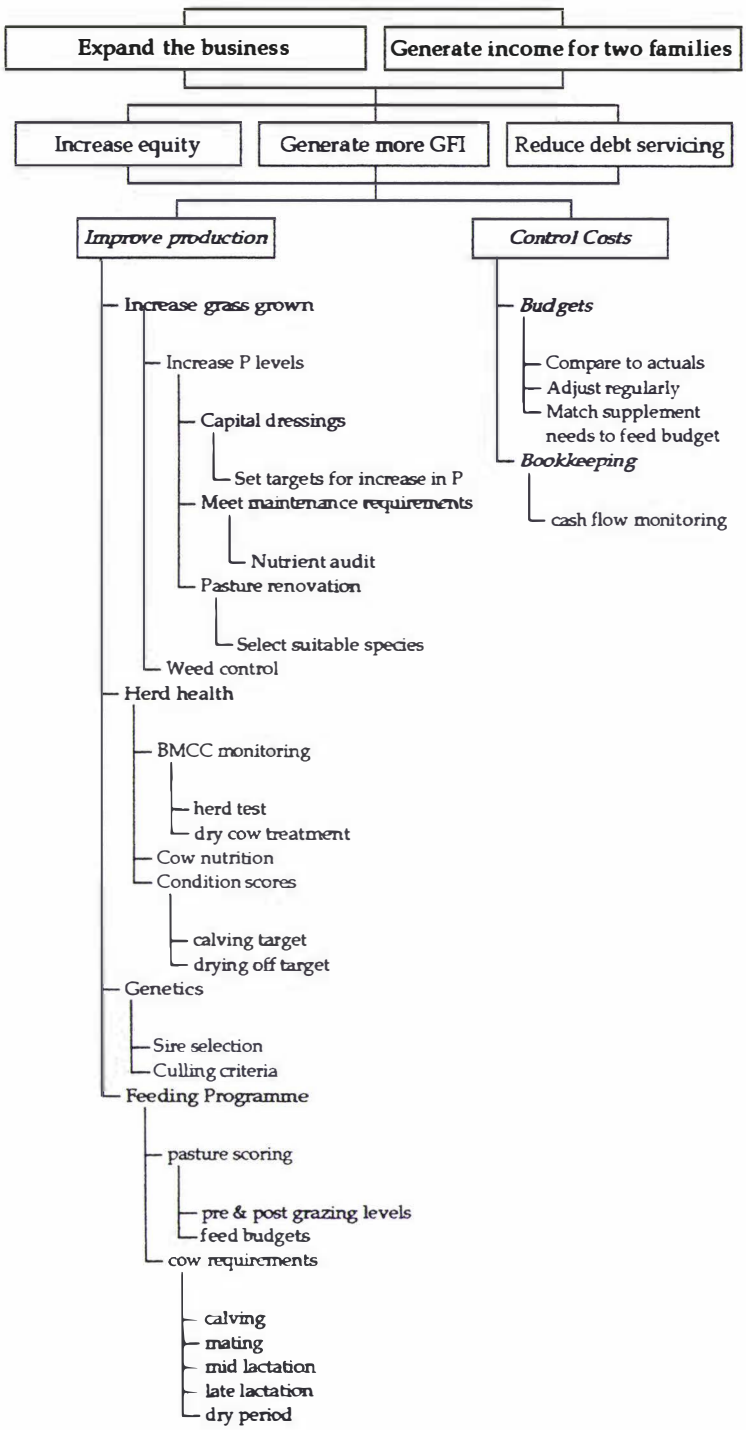

Figure 44 Goal Hierarchy Suggested for Case Study Two by the Researcher.

Although the concept of the balanced scorecard was explained to the couple, it was beyond their current ability to utilise it, as they must first develop an understanding of how they can influence their income. It is possible that this is one reason why the farmer continued to disagree with the removal of capital gain, as he may relate this to income generation.

4.11.3 Case Study Three:

This farming couple was unable to complete the value questions by themselves and it was necessary for the researcher to talk them through the questions. The difficulty was their ability to express their thoughts and views. Several other farmers commented on the difficulty of answering the questions but they were able to complete them independently. The value and goal statements identified no conflicts with the couple ranking statements within two points of each other.

The business analysis appeared to be understood as was the discussion regarding the cost of capital. The couple was aware that their level of drawings are high and that debt servicing is also high due to the fixed interest on loans of 10.5+%. Their bank had advised them that the cost of refinancing was too great. The eroding equity and the difference in operating profit and the cost of capital, i.e. value created was highlighted and explained and the husband was visibly distressed. When the researcher suggested that farm spending was being sacrificed for funding costs, there was some acknowledgement that this was happening. This would partially explain the high operating profit margin. It is uncertain whether the savings in wages will go into other farm costs or funding costs. However, the strengths and weaknesses analysis identified minimal gaps, except with respect to succession planning. The couple also identified a personal weakness of "going with the flow".

The goals identified by the farming couple involve employing a sharemilker or farm manager, and increasing personal drawings. Given the current position of the farm and the farm's historical performance this is a dream rather than a possibility especially when the couple claim that despite the seriousness of their situation, they are unlikely to change anything voluntarily. It is unclear whether the couple fully understands how unsustainable their current business practices are. The couple appears to believe that the financial position of the farm will improve through an improved milk payment (the loss of the Tui differential) and refinancing, in about 12 months time, with lower interest rates. This is the extent of their planning towards goal attainment. The researcher created the mission statement for this farm and it was received very positively by the couple.

A balanced scorecard was developed to the level of strategic objectives in the four perspectives by focusing on the components identified in the mission statement.

While the farming couple identified these objectives, they found the process difficult. The next step of identifying indicators was not attempted due to time constraints; the lack of monitoring or desire to do this, and commitment to developing a plan. It may be possible that the strong desire not to monitor business performance is because they do not really want to face, or be constantly reminded of their plight - "what you don't know can't hurt you!" It would be interesting to identify the conditions that would, if any, motivate the couple to take up strategic management.

Table 60 Mission Statements and Strategy for Case Farm Three

Vision & Mission: *"To operate a profitable business that is able to support our desired standard of lifestyle through the production of quality dairy produce. To have financial security, an enjoyable work environment and the freedom to share our time with the community while all the time maintaining a supportive environment for our family and staff."*

	Strategic objectives	Strategic Measures	
		Lag Indicators	Lead Indicators
Financial	• Maintain and improve lifestyle. • Reduce debt.		
Consumer	• Meeting quality standards of dairy company. • Elect suitable people to ensure the industry is operated in a manner that maximises the financial return to farmers.		
Internal	• Increase production. • Achieve top 10% on production basis. • Develop lease block to home farm level. • Monitor use of feed supplements.		
Learning & Growth	• Continue to increase practical farming knowledge • Develop nutrition and genetic knowledge		

4.11.4 Case Study Four:

Case study four recently underwent major farm expansion yet it appears to have occurred with minimal planning as is evidenced by the expansion costs substantially exceeding budget. What was supposed to cost around $500,000 to $600,000 resulted

in nearly a million dollars of borrowings. Current shed expansions, budgeted at $100,000, will also exceed budget by at least 10%. When explaining the business analysis, the husband was defensive about the results and the concept of the farming business having two components (property and dairying) was not accepted. In trying to explain/justify the results, he showed that he did not have a clear understanding of the concepts of equity and operating profits: "equity changes were related to operating conditions". This basic level of confusion raises questions about how much of the business analysis was genuinely understood.

The main area of conflict that occurred in the value and goal statements was the importance of time away from the farm and participating in off-farm activities. The husband scored these quite low (two and three) while the wife considered them to be very important. She achieves them and expressed a desire to see her husband have more time away from the farm.

The couple commented that they actually struggled to define their mission, as their driving objective was to achieve farm ownership. Now, this achieved they are focusing on developing the farm as a profitable asset for their children. They hope that the sons will return to the home farm.

The couple was interested in the concept of the balanced scorecard and after having worked on the mission statement and the process of identifying objectives for each of the four balanced scorecard components was relatively straightforward. The components are evenly represented. Due to time restrictions, indicators were not identified but after this was achieved the couple were very interested in continuing the process at a later stage. They saw the balanced scorecard as an opportunity to help verbalise and visualise their overall business plan and objectives. However, the ability of the couple and their staff to monitor and record appropriate indicators is an existing management weakness that must be addressed. The husband indicated that his staff was not particularly good at record keeping.

Table 61 Mission Statements and Strategy for Case Farm Four

Vision & Mission: *"To operate a profitable and progressive business that will maintain our lifestyle and provide for our retirement while providing a income generating asset for our children."*

	Strategic objectives	Strategic Measures	
		Lag Indicators	Lead Indicators
Financial	• Maintain lifestyle. • Reduce debt. • Purchase run-off block		
Consumer	• Meet and exceed quality standards. • Maintain & develop working relationships with suppliers and service providers.	• Grade free milk	
Internal	• Maximise pasture utilisation. • Maintain and improve resources.	• MS Production	• Monitor animal health. • Pre & post grazing levels.
Learning & Growth	• Upgrade staff competencies as needed. • Develop goal-setting skills in staff. • Maintain & develop own skills and knowledge.		

4.11.5 Case Study Five:

This couple had the most developed business plan and mission statement in the research group and had been using these since 1993. Both are reviewed regularly. The business plan includes a SWOT analysis as well as actions to address the issues identified. Their were no goal or value statement conflicts and the couple were very clear and focused on what needed to be achieved.

The business analysis was presented to the couple and the operational component was well understood. The cash costs of funding concept was not so well understood, in particular the value created metric, but both partners were interested in the concept and asked many questions to help improve their understanding. A lot of discussion took place with the couple asking the researcher's view on the value of planning given the range of farmers involved in the research. The couple knows they are in the minority and they struggle to understand how other farmers can function without the direction provided through planning. The concept of the balanced scorecard was explained to the couple and an attempt was then made to create one. This process was relatively straightforward because of the level of detail already existing in their business plan. Some additional discussion was required on the customer perspective to expand it to encompass supplier relationships.

Indicators for successful business relationships were quite difficult to identify and measure quantitatively. The couple received the scorecard concept very positively. The draft showed how all components of their business plan fitted together. The identification of the cause and effect linkages was something they were trying to identify in their business plan but the existing format (10 pages) did not allow this to occur. The couple were very satisfied with the ability of the scorecard format to display succinctly their goals and objectives. The strategic indicators were not fully identified.

Table 62 Mission Statements and Strategy for Case Farm Five.

Vision & Mission: *To achieve a high level of production of quality milk in a cost effective and efficient operation whilst providing a good lifestyle for our family.*

	Strategic objectives	Strategic Measures	
		Lag Indicators	Lead Indicators
Financial	• Reduce overdraft, when at 'seasonal finance' level to apply surplus to mortgage. • To increase our level of equity • Investigate buying another farm. • Meet family lifestyle expectations.	• Value created • Return on assets • Solvency • Equity growth	
Consumer	• To produce grade free milk • To deliver and maintain a good relationship with suppliers. • To present healthy and clean stock for sale. • To show awareness of international expectations i.e. tail docking, inducing etc.	• Grade free season • Favourable terms offered by suppliers • Somatic cell count at end of season.	• Pay bills on time. • Compare quality plan to achieved quality results • Maintain TB free status.

Internal	• To achieve maximum genetic gain. • To continue the development of the farm resources. • To grow the maximum pasture possible and of the best possible quality this and every following season. • To make full use of the farm resource.	• Total kg milksolids produced • Days in milk[19] •	• BW of replacement heifers and selected sires[20] • Percentage of area undergone pasture renovation[21] • Soil fertility level (targets test levels and outflow=inflow)[22] • Actual cashflow vs. budget
Learning	• To provide a good, safe and stimulating work environment. • To have a good relationship with our workers and to encourage their development, and education in Dairy Farm Management • Keep up with our education and remain informed of any developments in technology and research. • Use all information services available to us	• Labour satisfaction • Labour efficiency • Skills and techniques adopted	• Timetabled regular farm meetings with staff incorporating staff goals and the farm business plan. • Existing skills and competencies.

[19] Reflects feeding levels both pasture and supplements, herd fertility levels, herd condition score, liveweight of all stock

[20] Leads to improved genetic merit of milking herd and should be reflected in both total production and day in milk.

[21] Ensures the best quality varieties are sown linking back to pasture quality and therefore production. Target is 10% p.a of cultivatable area.

[22] Major determinant of pasture and crop growth and quality.

4.11.6 Case Study Six:

This couple was one of the two who completed the mission statement worksheet to the level of developing their own mission statement. The husband found the worksheet questions quite difficult to answer, as they required a lot of thought before an answer could be formulated and raised issues which previously had not been considered. The completed mission statement worksheet demonstrated that time and discussion had been put into exercise by both partners. The husband completed the value and goal statements, the wife had work commitments, so while conflict between partners could not be identified the mission statement worksheet and goal statements were consistent.

The business analysis was well received by the farmer and all concepts appeared to be well understood. The farmer was surprised to learn that the analysis showed the farm to be profitable, efficient and providing a return on investment. He had considered that the farm did not provide a return let alone demonstrate equity growth. The balanced scorecard was explained and the concept understood by the farmer. This farm business includes venison and beef enterprises: the farmer demonstrated a greater understanding of the customer, and the importance of "pleasing" them compared to many of his single enterprise dairying colleagues. This understanding is reflected in the consumer component of the balanced scorecard.

Table 63 Mission Statements and Strategy for Case Farm Six.

Vision & Mission: *"To profitably farm this land so that we may enjoy, protect and enhance the amenity value of our lake and bush area and to provide the best possible environment for raising our children."*

	Strategic objectives	Strategic Measures	
		Lag Indicators	Lead Indicators
Financial	• Achieve profitable and sustainable growth. • Achieve shareholder expectations.	• EVA • Return on Assets • Equity growth. • Operating profit margin	• Cost of Equity. • Retain Winter Milk Quota and premiums.
Consumer	• To be a preferred (or approved) supplier of milk, beef & venison	• Consistently supply high-grade milk to Dairy Co. • All yearling deer to meet specs for Cervena contract. • Beef animals to grade top grade at works.	• Adopt and apply best on farm practice (via Dairy Co.) • Become an accredited farm for Deer Quality Assurance 9001. • When developed apply Richmond's Best on Farm Practice (for beef).
Internal	• Improve production. • Improve consistency of winter milk production. • Improve pasture production and utilisation	• Raising total output. • Meeting 10 day quota levels (when introduced).	• Continue introduction of better performing cultivars. • Raise fawning percentages.
Learning & Growth	• Maintain and improve labour competencies.	• Increased production levels achieved and farm improvements maintained with same amount of labour.	• Annual holidays taken away from farm. • Further development of staff incentive payments.

4.11.7 Case Study Seven:

Case study seven had already gone through the process of developing a business plan including vision and mission statements. A series of categorised objectives had been identified as well as some targets and factors that were important to achieving these. When the business analysis was explained to the farmer, it appeared to be well understood, including the cost of capital and value created. The business analysis showed the cash funding costs of the business greatly exceeded the NOPAT. The farmer was aware of the high cost of debt and drawings on the business but was

unaware that he was eroding his net worth. Once explained he understood that this was not a sustainable position. Although the farmer undertakes substantial monitoring the analysis has an operational focus. Large amounts of time are spent on breaking down costs but borrowing for personal drawings and debt receive scant attention. The farmer monitors personal expenditure in the cash flow however it is recorded in such a way that the magnitude of the drawings is spread over several categories. The result is that drawings removed by the two families still remains very high. This is in direct conflict with the succession goal. At this stage no action has been taken to resolve this. Only the farmer completed the value and goal identification, as his wife was unavailable. However, he stated that they are both very active in goal setting and planning.

Developing a balanced scorecard with the farmer was a relatively straight forward process due the farmer having identified his objectives in a format very similar to that of the generic scorecard categories (Table 64). In many cases, the farmer had already identified indicators and these were able to be utilised in the scorecard. The farmer identified the value created metric as an important measure to track, especially with the cost of capital exceeding the NOPAT. A large part of the discussion was centred on ways to measure staff performance as the farmer had recently talked to staff about their individual goals and plans. He was surprised at the motivational effect this had on staff. This process will now become part of his staff management policy: to discuss with staff their goals and ambitions as well as sharing his ambitions to ensure that all parties understand each other's positions.

The farmer's feedback on the scorecard concept was very positive. The scorecard presented his business plan succinctly and clearly and he found that the cause and effect relationships were clearly and easily identifiable.

Targets for each identified indicator were not recorded as many of these will change between years and many had already been identified by the farmer and he would be able to apply them himself. Specific indicators were not identified and the lead and lag factors exceed the suggested 15-20. Many of these had a tactical orientation.

Table 64 Mission Statements and Strategy for Case Farm Seven.

Mission: *"To increase sustainable net income by being a preferred supplier of high quality milk and dairy livestock, by adopting excellence in farm management practices and technologies and by developing beneficial partnerships with our team of staff, while embracing the values of integrity, honesty and the pursuit of knowledge."*

	Strategic objectives	Strategic Measures	
		Lag Indicators	Lead Indicators
Financial	• Improve profitability • Reduce debt • Meet lifestyle expectations. • Develop off farm investments.	• EFS • Principal repayments • Value created	• Actual vs. budget. • Level of drawings. • Planning capital expenditure.
Consumer	• Produce quality products attracting premium prices. • Develop beneficial partnerships with customers and suppliers	• Grade free season. • Demand for, and reputation of livestock. • Supplier service and feedback. • Supplier responsiveness to requests.	• Reviewing quality practices & procedures. • Monitor antibiotic usage. • Assess the soundness of stock for sale. • Identify QM best practices.
Internal	• Maximise pasture production and utilisation • Maintain resources.	• Total MS production • Replacement rate • Soil fertility levels • Pregnancy rates and calving spread	• Stocking rate • Young stock growth performance • Soil fertility levels • Animal health performance i.e. lameness, mastitis etc. • Capital maintenance and replacement schedule.

Learning and Growth	• Develop relationship with staff that extends their skills & promotes teamwork in achieving agreed goals. • Continue to develop knowledge and competencies	• Labour satisfaction. • Rate of staff turnover (target 3yrs) • Labour efficiency of 150 cows/labour unit. • Contribution at discussion groups.	• Compare training plan to actual • Link training programmes to individuals' goals. • Discuss business goals with staff, how they can contribute. • Review and promote health and safety policy, i.e. record & eliminate potential hazards & accident sites. • Regular review of contract and conditions. • Evaluate and adopt new technologies and information

4.11.8 Case Study Eight:

This farming couple identified a major goal conflict by filling out the mission statement worksheet (predominantly completed by the wife). The conflict relates to the contentious issue of moving to town (ownership of the farm is retained) or remaining on the farm. While this issue did not appear to be new, documenting their goals and values lead to a heated discussion between the couple. The researcher completed the mission statement for the farm business and when presented to the couple the husband commented that it looked more like a mission statement his wife would prepare. Given that mission statement worksheet was completed by the wife, and was well articulated, this is probably not surprising. Despite this he chose not to alter the wording proposed.

Both the husband and the wife were able to complete the value and goal statements, but she was not able to be present for the business analysis or the balanced scorecard formation. Overall, the concepts within the business analysis seemed to be well understood especially the operational component. The farmer had commented previously that he received little business information other than that related to production and costs as a percentage of gross farm income. The farmer was unaware of the declining trends in the operating efficiency ratios and this caused him some concern. In some cases, changes could be explained while for others no justification for the result could be provided. The cost of capital concept, and how it related to the overall business performance appeared to be understood.

The balanced scorecard concept was explained and the process of identifying the strategic objectives was undertaken. The internal business perspective was completed with relative ease as the farmer has a very strong understanding and focus on production cause and effect relationships. The financial perspective was dominated by concerns on how to increase equity and provide for lifestyle and retirement, which may or may not include the purchase of a town property. The customer perspective was more difficult to elicit. The objective of meeting quality standards was considered "a given target" and quality protocols are already in the milking shed. The farmer also identified that anyone involved in the business needs to remember that the business is a food producer and actions taken should reflect this fact. The learning and growth perspective was also difficult to elicit. No formal

training programmes exist and the farmer tends to employ older experienced staff. The current employee is actually older than the farmer and is very experienced and wants a stable job.

The process of identifying lead and lag indicators was not entered into because of lack of time. An issue with identifying indicators for this farm business is the level of monitoring that occurs. Indicators for the internal business perspective will be the easiest to identify and control as they are measured and recorded regularly. Financial monitoring is limited to cash flow analysis, prepared by the accountant. The farmer considered that the scorecard could be a useful management tool and was interested in pursuing the development of his scorecard later.

The process of this research has for this couple identified an area of conflict that they must address and through discussion it would appear that there are several opportunities for compromise.

Table 65 Mission Statements and Strategy for Case Farm Eight.

Mission: *"To provide a stable and enjoyable lifestyle through operating a well run and efficient dairy farm while striving for self improvement and providing a positive and encouraging environment for our children, embracing the values of honesty, trust and loyalty. To work for God in helping others understand and share his purpose and love."*

	Strategic objectives	Strategic Measures	
		Lag Indicators	Lead Indicators
Financial	• Maintain and increase standard of living and adequately provide for retirement. • Increase net worth.	• EFS	
Consumer	• Meet the standards as set by the customer. • Recognise that the farm is a food producing business.		
Internal	• Maximise pasture growth and pasture utilisation in an efficient and economic manner. • Minimise wastages • Meet input requirements of the farm. • Balance stocking rate to best meet pasture growth	• Milksolids Production	• Feed budgeting • Pasture covers & residuals

Learning & Growth	• Continue own learning and development. • Providing learning and training opportunities for staff. • Provide encouraging environment, offering as much experience as possible.		

4.11.9 Case Study Nine:

This couple had very clear and defined goals though there was no formal business plan in place and relatively limited plans on how to achieve their goals. The value and goal statements did not identify any conflicts between the partners and the only weakness that the couple identified was their lack of formal planning. When filling out the mission statement worksheet the couple went to the level of developing their own mission statement.

The business analysis was presented to the couple and generally appeared to be well understood. Significant discussion took place when the business analysis showed strong negative trends in all operating areas of the business despite an average annual increase in production of 6.47%. The reason for this was explained by the couple as being due to the adoption of a new management system and lead in effect to prepare for the change is seen in the 1995-96 season. The couple believes that during the 1996-97, 1997-98 and 1998-99 seasons they were in a learning phase and still coming to terms with the new management system. They believe that for 1999-2000 season, they will be in a position to fine-tune the system and financial rewards will be visible. There does appear to be conflict between three very important goals set by the farming couple: to remain on a small unit, to employ labour and to maintain minimum drawings of $35,000. Based on current trends the business is already unable to support the level of drawings removed and the increase in production, combined with declining milk price, is not breaking even. While the couple were concerned about the increasing level of negative value created, they were quite confident that this would correct itself as they now have a full understanding of their new management system and tight control over personal drawings.

The balanced scorecard was introduced to the couple and they both appeared to understand the concept. Objectives were identified with relative ease for each of the

scorecard components, which may be a reflection of the couple's understanding of the interrelationships within their business. Both lag and lead indicators were identified by the couple and are a combination of their existing measuring system and measures that they feel will be useful for monitoring future business performance.

Table 66 Mission Statements and Strategy for Case Farm Nine.

Mission: *"To build financial security for us and our family through high production of milk and high quality by-products."*

	Strategic objectives	Strategic Measures	
		Lag Indicators	Lead Indicators
Financial	• Maintaining and improving lifestyle. • Develop investments (farming or non-farming). • Achieve profitable & sustainable growth. • Reduce debt • Generate cash surpluses	• Cash surplus. • Cash farm expenses as % of GFI. • Value created.	• Comparing actual to budget. • Cost of equity or cost of capital.
Consumer	• Produce quality product to attract maximum income. • Produce stock for sale in the top 10% of the market. • Be a preferred customer to input suppliers	• Grade free season. • Demand from buyers for quality stock.	• Availability to assist suppliers in promoting their products i.e. field days, field trials. • Establish shed quality policy and comparing actual results to the plan.
Internal	• Efficient pasture management for maximum pasture utilisation. • Strategic use of supplements in an efficient and cost effective way to maximise production. • Maintain and improve resources.	• MS production • Soil fertility levels • Weaning, mating and calving liveweights of young stock.	• Pre and post grazing levels. • Soil fertility levels. • Cow condition. • Young stock growth rates. • Budgeting for quality and quantity of supplements. • Planning for capital expenditure.
Learning & Growth	• Continue to keep up to date with new farming techniques and technologies. • Utilise appropriate professionals non-farming specialist advice.	• Adoption rate of new technologies. • Job satisfaction.	• Developing skills to understand cow nutrition. • Plan winter and summer holidays. • Regular weekends free.

4.11.10 Case Study Ten:

This couple have a range of both long and short-term goals most of which are centered on ensuring that the business is able to support lifestyle requirements both now and in the future. There are also some more complex issues present, such as the wife being able to re-establish her career and the husband identifying other activities to spend his time on when the targeted labour situation is achieved. While there is no formal planning it appears that presently, the couple has a reasonably clear idea of how they are going to achieve their goals. To date expansion has been possible through what appears to be very controlled spending, especially personal spending. It is also interesting to note that during the few years of the analysis, outside income funded personal drawings. The value and goal statements did not identify any conflicts. However, the couple identified some interesting strengths and weaknesses about themselves. They consider a great strength is the ability of both partners to gain off farm employment, especially in seasons where the milking herd has to be dried off early. The weaknesses identified included family commitments with having a young family and their lack of accounting and business knowledge.

The business analysis appeared to be understood as well as the explanations for the high level of some ratios (because of the business structure). However, in a later discussion it became obvious that not all concepts of the business analysis where fully understood by the couple. For example, interest rates were identified as a threat because of the negative effect they have on EFS. Comments like the one mentioned raise questions about the actual level of understanding of the indicators and the business' health. However, the couple appeared to be more focused on "congratulating" themselves for their performance despite having no formal monitoring or recording systems in place. Yet a lack of a business plan and business skills are something that the couple want to rectify through training and employing the right professional people to assist them. The first step has been made by employing a new accountant who writes formal reports for his clients as well as providing comparative analysis data. The researcher prepared the business' mission statement. The wife's response to the mission statement was that in her experience it was only a group of words and that anything could be written and hours were wasted finding the right words. She seemed not to evaluate the mission statement as being representative of their overall objectives and the responses continually came

back as "write what you want it's only words". Comments from the husband were more positive and constructive as his focus was on the content of the statement and its accuracy in reflecting the overall objectives of the farming business.

The balanced scorecard was developed only to the level of strategic objectives mainly due to the couple's lack of monitoring and recording system. Several objectives were identified for the learning and growth component, as this is an important part of operating the farm business for the couple and was identified in their mission statement. The husband has a good understanding of production relationships thus identification of the key internal business perspective objectives was achieved with relative ease. The financial objectives were also identified quickly as being critical to achieving the mission statement. The customer perspective created difficulties in elicitation and the researcher provided assistance in trying to identify objectives that were relevant to the couple. There was a sense that the dairy company makes quality decisions and passes them down to the farmer and that what the farmer does has little influence on the consumer.

Table 67 Mission Statements and Strategy for Case Farm Ten.

Mission: *"To provide a good standard of living for our young family and financial independence through the production of high quality milk while also providing a good training environment for new people entering the industry."*

	Strategic objectives	Strategic Measures	
		Lag Indicators	Lead Indicators
Financial	• Reduce debt. • Increase net worth. • Support desired lifestyle. • Support children in their development. • Expand the business. • Finance retirement		
Consumer	• Meet and exceed quality standards. • Be a preferred customer and supplier. • Produce quality livestock.		
Internal	• Maximise utilisation of all pasture growth from milking platform and run-offs for milk production, young stock growth and supplements. • Maximise young stock performance.		

Learning & Growth	• Encourage and offer staff involvement in practical and formal training opportunities other than AgITO. • Encourage staff participation at discussion group. • Be a preferred employer. • Develop operating skills. • To keep informed with developments in farm management and technologies. • Build and utilise experience.		

4.12 Value Observations:

The value statements used during this research were classified into the four categories suggested by Gasson (1973) and are represented in the following plots (Figure 45). These plots demonstrate that this group of farmers has a range of values that are spread relatively evenly across the four categories. However, for most farms either intrinsic values (valuing farming as an activity in its own right) or instrumental values (viewing farming as a means of obtaining income and security with pleasant working conditions) ranked the highest. The more square the radar plot for each individual, the more even the spread of values over the categories. Case studied six and eight show values very dominant in the intrinsic category and least represent a square. Case studies six and seven were only completed by the husbands.

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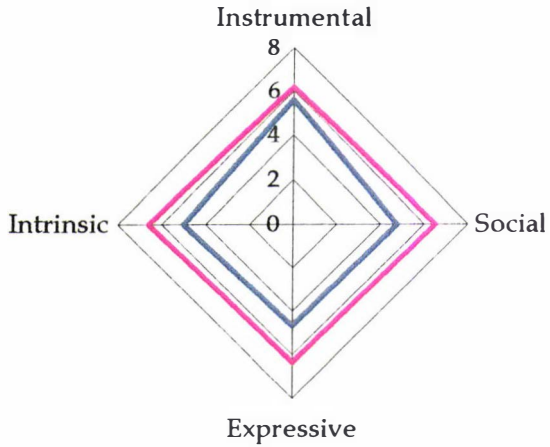

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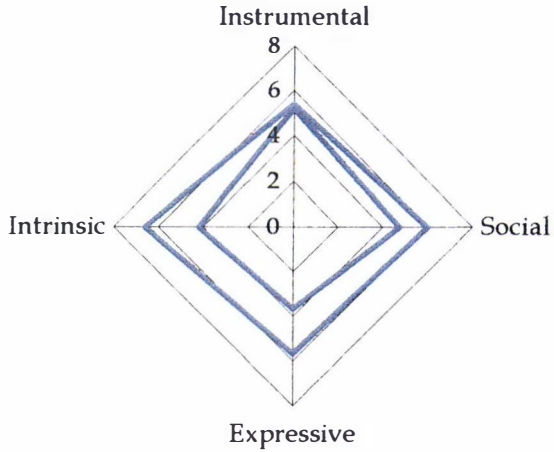

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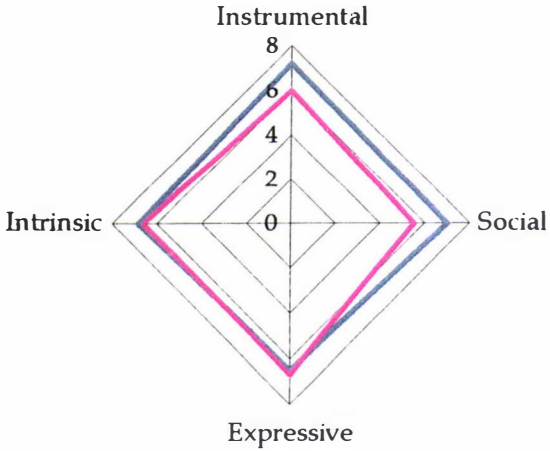

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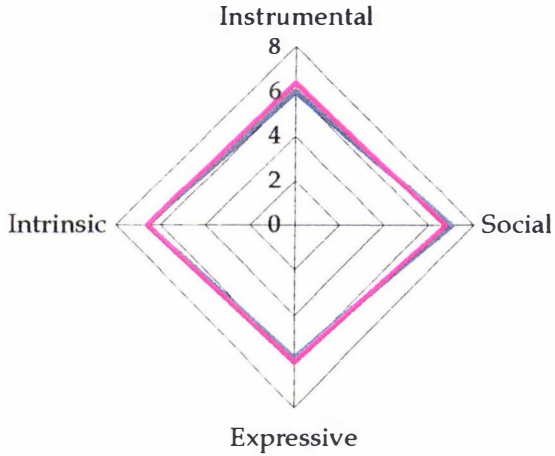

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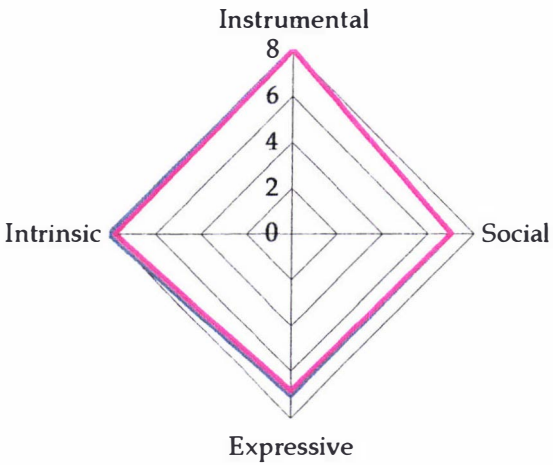

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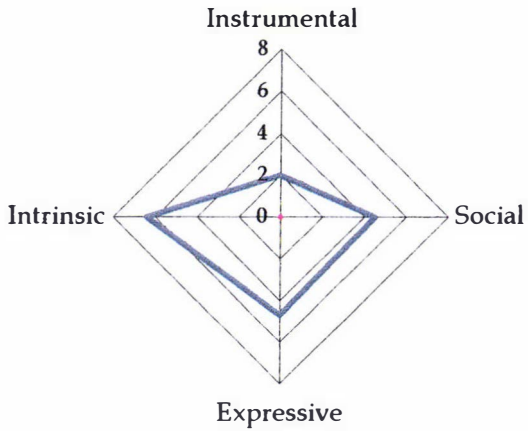
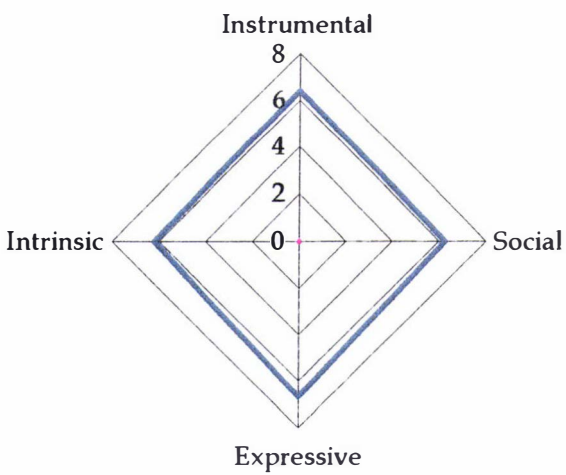


CSF 7



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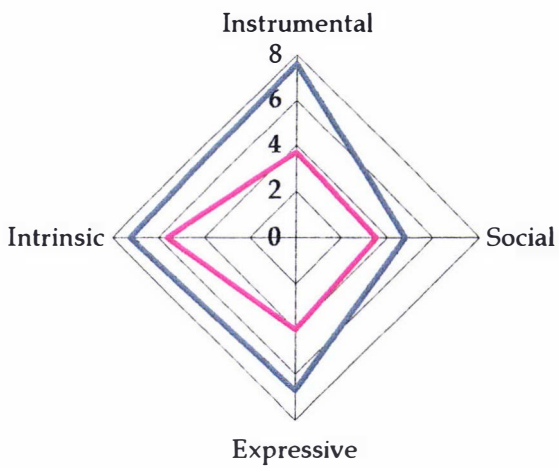
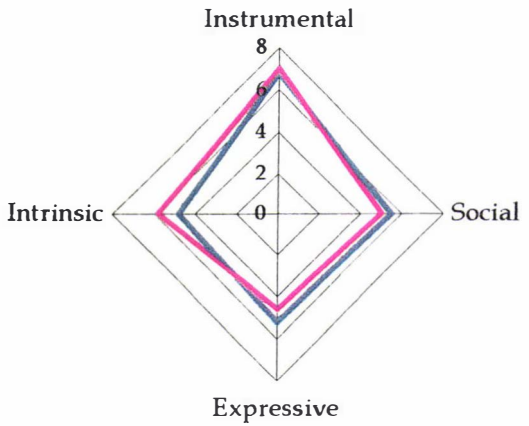


CSF 9



CSF 10

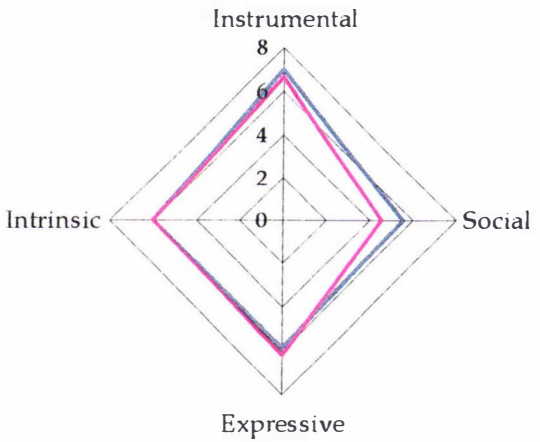


Figure 45 Average Ranking of Values Based in Gasson's (1973) Categories. = Female partner, = Male partner.

5 Discussion and Conclusion

The central purpose of this study was to investigate the hypothesis that "farmers do not have adequate key performance indicators for measuring goal attainment". The methodology used, to determine the adequacy of the key performance indicators used by farmers, was to undertake a detailed business analysis and clearly define, with reference to the mission, the linkage between performance measurement and strategy. In developing the hypothesis, several assumptions were made. First, that farmers had an overall mission or goal, whether it was formally or informally recorded. Second, it was assumed that farmers would have identified goals associated with this. Third, that they had some structure and process in place for monitoring those goals. The ability of the existing goals to bridge the strategic gap would then be reviewed. The monitoring and control processes in place would be reviewed and analysed in the context of their relevance to business goals. A secondary objective of the research was to test the concept of the Balanced Scorecard as a tool for farmers to measure the implementation of strategy. The Balanced Scorecard would enable farmers to assess their goals for congruence, better identify the key drivers for their businesses and therefore correctly identify their key performance indicators that would signal whether progress was being made in achieving goals.

Within the research group of ten farmers only two had prepared mission statements. Four farming couples had formally identified goals, two had informal goals and four had no goals. Only the two farms with mission statements had formally documented business plans and only one of these farms had developed a monitoring system that was aligned to their strategy. For this farm, a series of indicators had been identified relative to what were considered to be the drivers for the business. Therefore, 80 percent of the sample lacked direction and an overall mission, in terms of a well-written purpose statement.

Farms without an overall objective or mission statement struggled to identify goals and had limited monitoring systems in place. This is consistent with literature (CCH, 1994; Dobson and Starky, 1994; Parker *et al.,* 1997; Steiner, 1997; Willyerd, 1997) which states that without direction or focus, goals cannot be identified. Therefore, it was decided that time needed to be spent with the case farmers to identify their

values and goals to develop a mission statement. Value and goal identification worksheets were provided to each farming couple. The final section of the worksheet was associated with the development of a mission statement, however only two farming couples completed this section. The researcher created the remaining six mission statements from the information provided. Those farming couples that struggled to identify their mission or goals demonstrated a short-term focus only, with some admitting that they had never thought about their position in the future (Boehlje, 1993). These observations, as discussed later, may be the result of an external locus of control or the farming couple not understanding the relevance of strategic planning to the business (Kaine *et al.*, 1994) or being inadequately skilled in strategic management (Stantiall *et al.*, 1999).

The identification of values is essential for goal formulation (Olsson, 1988). In most cases, couples with clear values had also developed a range of economic and non-economic goals. These couples, not surprisingly, found the task of listing their values and goals relatively straightforward. While value and goal identification are crucial to strategic planning so to is identifying an individual's perceptions of control and their view of success. An individual's perception of control defines their business and farming objectives, and determines the strategies they will develop to achieve their goals (Kaine *et al.*, 1994). Therefore, those farms that did not create their own mission statements may be reflecting an external locus of control towards their futures. If they perceive control only at the operational and tactical production level, then the formulation of goals and strategy is almost impossible, as there will be no understanding of the relationships between strategy and operational decision.

In presenting the mission statements to each farming couple, it became evident for two out of the ten farming couples that the concepts represented the values of only one partner. Despite this incompatibility, the farmer did not request changes to be made, possibly because they did no want to offend their partner. Each farming couple was presented with another series of value and goal statements to identify goal conflict as well as reinforce the initial process of value identification. Overall, these statements identified little conflict between each couple. Roberts and Hollander (1997) suggest that the level of conflict observed between couples is a function of the stage of the lifecycle and business development. However, another possible reason was that partners responses were not confidential as both partners

shared the same response form. This may have caused responses to be modified, and as a consequence, goal conflicts remained unresolved.

The business analysis divided each business into its farming and property businesses thereby separating out the effect of capital gains. The operational and funding components of the farm business were then determined. The initial aim of the analysis was to gain an overall picture of the business and compare the research technique to the methods of analysis used by the farmers. In all cases, the level of business analysis done by farmers varied greatly from the research technique. The business analysis represented a strategic view of the farming business by identifying the operational, funding and growth components of the business, and associated indicators measured annually or biannually.

Only one farm in this research demonstrated the use of strategic indicators, which fitted in with their strategic plan. The other nine case farms were characterised almost exclusively by monitoring systems with a tactical and operational focus. Kaine *et al.* (1994) suggested that this non-strategic approach to business analysis is due to very few farmers exhibiting an internal locus of control with respect to financial performance. However, the majority of farmers showed an internal locus of control with respect to production management. The level of monitoring conducted generally included production levels, bookkeeping and budget preparation, comparison of annual budget to actual financial and production performance, and bank statement monitoring. These findings are consistent with Holmes and Wilson (1987), Barry *et al.* (1995) and Parker (1997). It should be noted that all New Zealand dairy farmers receive production and milk quality information at every milk pick up therefore information is available either daily or every second day. All ten case farms used this information source. The extent of feed budgeting and control varied considerably, from no monitoring through to regular monitoring. For example, weekly pasture walks with a rising plate meter and updating a feed budget spreadsheet occurred on one farm.

Financial monitoring was, at one extreme, based on 'instinct' with no monitoring at all, to the other extreme of fortnightly cashflow monitoring and budget updating based on changes in the feed budget and milk production budget on the other. However, the most common form of financial control was cashflow monitoring. In

New Zealand, the presence of a Goods and Services Tax for most farmers requires bimonthly tax lodgments (though they may choose six-monthly or annual lodgments) thus making regular bookkeeping necessary. Some farmers choose to employ their accountant to prepare their GST lodgment. Three farmers received updated cash flows from their accountants while one received nothing and was satisfied with this situation. Amongst the farmers who prepared budgets, five updated them on a reasonably regular basis. These farmers appeared to do some variable cost (farm working expenses) analysis and three monitored debt servicing as a percentage of gross farm income. It is interesting to note that of the five farmers that claimed to use Economic Farm Surplus (EFS) metric only one demonstrated a clear understanding of what it represented and how it linked into their business. These findings are not dissimilar to Sealy and Warren's (1994) survey. Within their sample (n=110), 94% of respondents kept some form of cashbook. Ninety percent of these claimed to do a comparative analysis with previous year's data. While 96% of respondents looked at their tax accounts, utilisation of the information was very low with only 36% of respondents preparing cash flow budgets. The low use of financial budgeting was a result of the perceived difficulty they held of preparing them. This suggests that while farmers may have access to a large amount of data many may not be familiar with how to utilise it or even recognise a need to do so. Sealy and Warren's (1994) results are similar to those of this research in that farmers do not effectively utilise the data available to them or conduct analyses of these data.

There were instances where the farmers goals where unrealistic and unobtainable. Four farms were eroding their net worth or equity, yet five showed growth in net worth at an average annual rate of over two- percent. One farm showed little change in the value of its net worth. The farmers with eroding net worth were unaware of their situation. In contrast, within the group of farms with equity growth, only one farm expressed surprise at the information, possibly because they were not fully aware of their position either. The frequency of monitoring showed no relationship to growth or business success, indicating that the monitoring systems are incomplete which is to be expected when a strategic plan is absent (Wright, 1985; Koontz and Weihrich, 1990). For the farms with equity growth, the analysis suggested that their current business direction would support goal attainment. Nevertheless, in only one case were indicators identified to track progress in implementing strategy.

Presenting the business analysis to the farms generated two distinct responses. The first was characterised by few questions being asked and little discussion with the researcher. It is unclear whether these responses represented a lack of interest or a lack of understanding in the information. The absence of discussion may have been due to a communication problem with the researcher in that explanations were not matched to the individual's learning technique (Stantiall *et al.*, 1999). Alternatively, farmers may have rejected the information presented because it differed from their perception of their financial position. The second response experienced was one of open discussion with individuals freely questioning and discussing the information with the researcher. The focus on tactical or operational management may also have influenced their understanding of strategy and its execution. Therefore, they were expected to think at the strategic level but most struggled to identify or understand the link between strategic and tactical management. The presentation of a large amount of information and several new concepts in only a couple of hours may have compounded this. Contrast this to post-graduate farm management students who receive teaching and constant reinforcing of the concepts for the duration of the academic year using many farm examples. Therefore, to obtain a fundamental knowledge of farm business analysis requires more than a few hours of study (Stantiall *et al.*, 1999). While the research did not provide a suitable timeframe for individuals to comprehend and interpret the information before they were expected to respond to it, it did reflect the time constraints experienced by farm consultants. Thus adoption of a more formal business approach, is unlikely to occur unless they have learning opportunities in this field tailored to their needs (Stantiall *et al.*, 1999).

The cost of capital and its related indices was the area of the business analysis that all farming couples had some trouble understanding. Consequently, farmers had an incomplete picture of their business, with respect to the cost of capital, an area where major problems frequently occur (as demonstrated by this research). Calculating the cost of capital is essential if a holistic business analysis is to be conducted (Shadbolt, 1998a). As demonstrated by several of the case farms it is possible for an operational focus to provide inaccurate information with respect to business health.

Due to the time required to go through the business analysis and the low comprehension rate, most participants struggled to relate the business metrics back to their goals. It had been planned that at this point the Balanced Scorecard would

be introduced. However, only two farms had a strategy for which a Balanced Scorecard could be completed. These two farmers found the draft Balanced Scorecard to be useful as it displayed their complex business plans in a succinct format. The key aspects of their business plans were highlighted and the identification of key performance indicators was simplified by understanding the cause and effect linkages embedded in the strategy (Kaplan and Norton, 1996c).

The application of the Balanced Scorecard had its use for the remaining farms. It was used primarily as a tool to assist these farming couples to identify their strategic objectives relative to the farm mission. This highlights the potential to apply the Balanced Scorecard as a strategic planning tool. The Balanced Scorecard highlights strategic goals and management already occurring within businesses thus providing a framework with which can aid farmers in thinking about the cause and effect linkages. The prompts provided by the Balanced Scorecard perspectives may also assist in influencing locus of control. For example an individual who has a goal of quality production will have a strategic goal of having a grade free season and will have a management plan to attain that goal. However, the individual may not recognise that goal as being strategic. The Balanced Scorecard has an important roll in helping individuals understand the relevance of strategic planning to their business through identifying cause and effect relationships that ultimately link to the overall mission. The impact of actions and decisions can be related back to the overall objectives. The most important aspect of developing a balanced scorecard however is that the business has a clear purpose behind its development. Therefore a mission statement is an essential step and it must be meaningful and capable of being broken down into goals and measures (Creelman, 1998).

In developing strategic objectives with the Balanced Scorecard, the following observations were made. The production focus of the participating farmers was highlighted, as individuals were most comfortable working with the internal business perspective. The ability to identify measures for the financial component appeared to depend directly on the level of financial analysis they had undertaken. Measures identified generally did not cover the whole business however some farmers indicated that they would adopt the value creation metric (economic value added).

Within the learning and growth perspective of the scorecard the general focus was on improving production based knowledge and skills. Few individuals saw the need or had the desire to improve their financial and business management skills although these were obviously weak (Stantiall *et al.*, 1997). This attitude reflected a perception that financial analysis was unimportant. Sealy and Warren (1994) identified that the low take up of financial training was due to the perception that it was of low benefit but high cost (time and money). In addition, they identified that farmers were concerned that their financial position would be exposed to others. Again, this can be related back to farmers' locus of control. The lack of desire to develop skills in the financial area suggests an external locus of control therefore financial management is perceived to be unachievable. Therefore financial issues are "handed on" to others to manage such as bankers and accountants.

The customer/supplier focus was the most difficult perspective for the farming couples to complete: with as many demonstrated a very narrow view of the customer. The customer was generally considered to be the dairy company which imposes it own quality standards on farmers. This highlights dairy farmers' perception that they have only one customer, the dairy company, compared with sheep and beef cattle farmers. Only five of the farms looked beyond the dairy company as a customer and considered other issues such as animal welfare. Few individuals considered the importance of having a good relationship with their suppliers for example fertiliser suppliers, veterinarians and banks. It is difficult to ascertain whether the observed responses to the customer/supplier focus are due to the traditional position of farmers as weak buyers and sellers. Alternatively, it may be a reflection of the importance, or lack of, that individuals place on this issue because they do not understand their position in the supply chain.

The low level of strategic planning highlighted that farm performance monitoring and feedback is inextricably linked to planning for goal realisation. There are several possible reasons why farmers have not adopted strategic planning. It may be prevented because couples have not identified their values which are essential for goal formulation (Olsson, 1988). Where farms have clear, well-established values, they are more likely to follow a structured process leading to goal attainment provided they have business planning knowledge and skills. However where farms have only vague values they tend not to have formulated goals leading to lax

decision making (Olsson, 1988). Most of the case farms were characterised by vague values and absent goals and had a tactical and operational management focus. However, having well defined values did not automatically lead to realistic goals or strategy development. This highlights that goals are often strategic yet the management focus is tactical and operational thus the cause and effect linkages do not exist.

The focus on tactical issues may also be influenced by the common belief that high production levels are responsible for a healthy business (Deane, 1993). This is exacerbated by both a community and industry perception, that success is dependent on the quantity of milksolids produced on a per cow or per hectare basis (Deane, 1993). There is also a requirement for some accompanying financial information such as operating costs as a percentage of gross farm income and economic farm surplus (EFS) to support this perception of success. However EFS does tell the whole story (Shadbolt, 1998a). This perception of "success" relates to the farmer's skill in tactical and operational management. These management foci are rewarded thereby encouraging farmers to accept production only based goals with a narrow focus on business health indicators. Hence, if farmers do not understand strategic management without self-motivation they are unlikely to find much support from within the industry. Further, this will encourage the majority of farmers to maintain an external locus of control with respect to their personal and business future.

The level of strategic planning amongst farmers was shown to be very low. This appears to be due to farmers', perceptions of control and success and to a lack of understanding of the relevance of strategic planning and the benefits it can provide to the business manager (Parker *et al.*, 1997). The perceptions of control and success often reflect those of the community and industry. If this situation is to be reversed, it will require a new focus from within the industry. Perceptions of success need to incorporate strategic issues such as growth and wealth creation. This will require most professional advisors within the industry to review their current practice with respect to farm business planning and analysis. Business analyses must go beyond Economic Farm Surplus; a holistic view of the business is crucial: the cost of capital and growth must be considered (Shadbolt, 1998a). This will require additional training of consultants and extension specialist to ensure that they are familiar with and understand the business analysis and concepts such as strategy and the Balanced

Scorecard. Future strategic planning work with farmers should focus more on farmers' views of success and perceptions of control. Without this knowledge, neither the farmer nor adviser will be able to understand the relevance of, or link actions to the mission.

In a strict sense, the research hypothesis could only be tested on two case farms where a formal farm strategy had been developed. With respect to case farm seven, the hypothesis was true, as the identified key performance indicators did not measure goal attainment. In particular the important goal of succession is in direct conflict with current management. The farm business has been eroding equity and experiencing negative growth since 1995. Case farm five disproved the hypothesis as the key performance indicators were linked to goals, such as equity growth. The other farmers' performance measures related to their management focus of production and operations. Their measures are inadequate for monitoring strategic goal attainment.

Further research needs to have a stronger focus on identifying the farmer's perceptions of success and control. This should then help highlight how the locus of control can be influenced. Better definition of the link between the locus of control and the mission statement, values and goals is needed so that it can then be applied to farm businesses. The use of the balanced scorecard also needs to be developed further for farm businesses. Its use as a planning tool can be refined but work is needed to ensure that it is used as a management tool and not just a planning tool. Therefore, a process should be developed to make it a readily adopted management tool.

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7 Appendix A: Value Identification and Mission Statement Worksheet

Mission Statement Development

To develop a strategic plan for your business a mission statement needs to be developed.

A mission statement defines why the farm business exists and is based on the values and beliefs of the owners.

Values are the beliefs and standards of the owners about how certain things should be achieved. Who you are and how you live determines your values. They are also reflected in the way you conduct business.

Goals are statements of what the owners/family wants from the business and how they would like to look in the future.

This process does require some time if maximum benefits are to be gained from the process. The answers to these questions will be the basis of your business plan.

Some sample dairy farm mission statements are listed below. There is no right or wrong answer or format to a mission statement. The most important aspect of the mission statement is that it reflects the beliefs and values of those people involved in the business.

"Build a sound financial position [through sharemilking for 3-5 years] that will allow Bill and Sue to pursue careers and other interests both individually and as a family, and to provide the best possible environment for raising our children."

"Through efficient farming practices and the [production] of high quality milk, we will use the resources we have to gain farm ownership. Eventually we will commit and fully fund ourselves to full time work for God in the community."

" The mission of our farms is to provide an above average standard of living for both owners and employees through the sale of milk, livestock, and crops, with an emphasis on breeding a high-quality, registered Holstein herd."

The following questions may assist you in identifying your values and goals and ultimately your mission statement. The first four questions try to assist you in identifying your personal goals. All family members involved in the business should answer them.

1. What can I contribute? What are the skills and talents that I possess?

2. What would I like to do? What are the things that I would like to accomplish or contribute?

3. What would I like to be? What are the character strengths and qualities that I would like to have?

4.What are the values that I choose to be the basis for my life?

5. What is important to you in life?

6. How would you like to be seen by others? What would you like people to say about you?

7. How would you like to be remembered and what do you want to be remembered for?

Questions 8, 9 and 10 should be answered through group discussion with involved family members.

8. What are we in business to do? What products and/or services does our business provide?

9. What would we like our business to be? What are the strengths and qualities that we want our business to have? Where would we like our business to be positioned in the community and in the industry?

10. What are the values that we choose to be the basis of our business?

Identification of Values:

List all of the things and/or qualities that you value as an individual. In another column, list the things and/or qualities that you value in your business and in business dealings. Some examples of values are honesty, trust, loyalty etc.

YOU	YOUR BUSINESS

Feel free to develop your own mission statement. Some sources suggest that a personal mission statement should be written first. The business mission statement then combines the missions of all individuals involved in the business.

Mission Statement:

GOAL IDENTIFICATION:

What are your goals? What do you want to achieve and when do you want to achieve it by?

8 Appendix B: Value and Goal Statement Summaries

	CSF 1		CSF 2		CSF 3		CSF 4		CSF 5		CSF 6		CSF 7		CSF 8		CSF 9		CSF 10	
VALUE STATEMENTS	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Making maximum income	6	7	4	5	6	6	5	6	8	8	3	-	7		8	-	7	7	6	6
Gaining recognition, prestige as a farmer	5	6	6	3	6	4	7	6	7	6	3		5		6	4	6	4	5	4
Feeling pride of ownership	5	6	7	4	6	8	5	6	6	5	8		6		6	-	7	4	6	6
Enjoyment of work tasks	6	7	8	6	7	7	5	6	8	8	8		7		7	5	6	7	6	7
Making a satisfactory income	6	8	6	6	8	6	7	6	8	8	8		7		8	5	8	8	8	8
Belonging to the farming community	6	7	7	6	7	6	7	6	8	8	6		6		6	4	4	3	6	4
Gaining self-respect for doing a worthwhile job	4	7	7	5	7	8	7	6	8	8	7		7		7	4	6	7	7	7
Preference for a healthy, outdoor, farming life	5	7	7	5	7	8	7	7	8	8	8		6		8	6	4	4	6	5
Safeguarding income for the future	5	7	6	5	7	6	5	6	8	8	8		6		7	-	7	7	8	8
Exercising special abilities and aptitudes	4	7	5	4	7	6	3	6	7	6	2		6		7	5	5	4	5	7
Purposeful activity, value in hard work	4	7	5	4	7	6	6	6	8	8	2		5		7	5	5	6	6	6
Expanding the business	5	2	6	5	8	6	6	6	8	8	-		6		8	4	6	6	7	5
Working with other members of the family	4	7	5	5	7	5	7	7	5	6	3		7		0	-	6	7	4	3
Chance to be creative and original	5	4	3	2	6	5	4	6	5	6	1		6		6	5	4	3	4	4
Independence - freedom from supervision and to organise time	6	5	7	4	7	6	7	8	8	7	8		6		7	7	5	7	6	6
Providing congenial working conditions - hours, security, surroundings	6	7	5	5	7	6	7	8	8	8	4		6		7	7	6	7	6	6
Maintaining good relations with workers	4	6	6	5	8	7	7	8	8	8	6		7		7	7	6	6	7	7
Meeting a challenge, achieving an objective, personal growth	6	7	6	5	7	7	8	6	8	8	4		8		7	5	4	5	7	7

Control in a variety of situations	4	7	6	2	6	6	8	6	8	8	6		7		7	5	4	5	6	6
GOAL STATEMENTS																				
Maintain a standard of living	6	7	8	7	6	6	6	6	8	8	8		7		7	6	7	7	8	8
Reduce physical effort in farming	6	7	4	5	6	5	4	4	7	7	4		6		6	8	5	4	5	5
Pay mortgage and other loans on time	6	6	7	8	7	6	7	7	8	8	8		8		8	7	8	8	8	8
Have all-year-round work	4	7	4	3	5	5	0	0	5	0	6		4		7	4	3	-	5	4
Stable product prices	6	6	5	6	6	6	6	6	7	8	6		6		5	7	6	6	8	8
Show a yearly profit	5	7	8	8	6	7	7	7	8	8	7		8		7	8	8	8	7	7
Live in the country	2	7	6	6	7	7	5	7	8	6	8		6		6	4	4	4	5	4
Increase the family's standard of living	6	6	6	7	6	7	2	3	8	8	6		5		5	6	6	7	6	6
Know minimum gross income for the year	4	4	7	7	6	6	7	7	8	8	2		7		5	2	6	5	6	7
Retain 5% of turnover to invest in the farm	3	5	6	6	5	5	2	2	8	8	4		6		4	5	5	6	6	7
Reduce the long hours of work	4	4	6	7	6	6	3	3	8	8	4		6		6	6	5	4	5	6
Have an enterprise with a high return	4	4	6	7	6	7	7	7	8	8	0		8		8	7	7	7	7	7
Employ more people	3	1	6	7	4	5	0	0	4	3	1		3		0	3	7	7	0	2
Have at least one day off per week	4	8	8	8	6	6	2	8	7	8	8		4		7	8	7	6	4	7
Buy more land	5	0	7	6	7	7	3	4	8	8	1		4		7	2	6	5	7	5
Rent/lease more land	3	0	6	6	6	6	3	4	5	7	0		5		7	2	6	5	5	5
Involve the family in decision making	4	6	7	6	6	6	5	6	8	8	2		7		2	2	5	5	8	8
Have a holiday away from the farm at least once a year	6	8	8	8	7	7	5	6	8	8	8		7		8	8	7	6	8	8
Avoid borrowing for the farm business	5	5	4	5	6	5	0	0	2	0	0		3		4	6	4	5	4	4
Save for retirement	4	6	7	5	5	4	3	4	6	8	7		6		7	5	5	5	8	8
Be recognised as a top farmer	4	4	3	3	5	5	3	3	8	7	2		3		3	6	5	6	6	4
Have an investment that pays quickly	4	4	5	5	6	6	3	3	7	5	0		8		4	5	5	5	6	6
Have time away from farm for other activities	6	6	7	8	6	6	3	8	8	8	8		7		7	7	7	6	6	5

Increase net worth	6	6	8	8	6	6	3	3	8	8	8		7		7	6	7	7	8	8
Keep loans below 50% of net worth	6	6	4	6	6	6	8	8	5	3	7		6		4	7	5	6	6	6
Increase the farm income	6	6	8	8	6	7	8	8	8	8	5		7		8	7	7	7	6	6
Generate a stable income	6	6	5	6	6	7	6	6	8	8	2		7		6	7	6	6	7	7
Have an income comparable to another job	5	5	6	6	6	7	3	3	6	7	3		6		7	6	6	6	5	4
Receive recognition for special achievements	-	6	5	5	6	5	2	3	6	5	6		4		3	5	4	4	5	4
Have a job without repetitive tasks	4	6	3	4	5	5	2	3	4	7	6		5		4	6	4	4	4	4
Use insurance where possible	3	6	6	4	6	6	2	2	8	8	3		5		7	3	4	4	6	7
Be own boss	2	8	7	5	7	7	7	6	8	8	8		8		6	7	6	5	7	7
Leave the business for the next generation	4	8	6	6	6	6	6	7	7	8	8		6		3	5	5	4	5	4
Be part of the community and/or church	5	8	7	6	6	6	6	7	6	4	2		7		7	7	7	7	4	4
Obtain the highest production in the area.	2	3	4	5	6	6	0	0	6	1	2		6		6	5	4	4	6	6
Run an environmentally sustainable farm business	4	4	6	5	7	6	8	7	8	8	4		8		8	7	6	6	6	7

Value statement average ranking for each category

	CSF 1		CSF 2		CSF 3		CSF 4		CSF 5		CSF 6		CSF 7		CSF 8		CSF 9		CSF 10	
Instrumental Average ranking	5.6	6.2	5.4	5.2	7.2	6	6	6.4	8	8	2	0.0	6.4	0.0	7.6	3.67	6.8	7	7	6.6
Social Average ranking	4.75	6.5	6	4.75	7	5.5	7	6.75	7	7	4.5	0.0	6.25	0.0	4.75	3.5	5.5	5	5.5	4.5
Expressive Average ranking	4.67	6.33	5.67	3.67	6.5	6.67	5.83	6	7	6.83	4.67	0.0	6.67	0.0	6.67	4	5.2	4.6	5.83	6.17
Intrinsic Average ranking	5	6.6	6.6	4.2	6.8	6.6	6.6	6.6	8	7.8	6.4	0.0	6.2	0.0	7.2	5.6	4.8	5.8	6	6

9 Appendix C: Business Ratios.

Business Ratios for Case Farm One.

	30-Jun-93	30-Jun-94	30-Jun-95	30-Jun-96	30-Jun-97	30-Jun-98
Current assets	$19,960	$5,092	$11,087	$14,222	$9,091	$7,636
Saleable shares	$0	$0	$0	$0	$0	$0
Total assets	$1,319,493	$1,580,304	$1,546,060	$1,557,304	$1,518,679	$1,493,798
Current Liabilities	$41,789	$76,639	$96,592	$41,589	$43,296	$31,939
Total Liabilities	$221,063	$411,866	$420,090	$415,214	$415,773	$384,656
Solvency						
Debt:Assets	17%	26%	27%	27%	27%	26%
Debt:Equity (leverage)	20.13%	35.25%	37.31%	36.36%	37.70%	34.68%
Net worth (Owner's Equity)	$1,098,430	$1,168,438	$1,125,970	$1,142,090	$1,102,906	$1,109,142
Equity	83%	74%	73%	73%	73%	74%
Net Indebtedness	$182,779	$388,226	$387,685	$379,475	$379,623	$349,961
Debt Servicing						
Liquidity	0.48	0.07	0.11	0.34	0.21	0.24
Working Capital	-$21,829	-$71,547	-$85,505	-$27,367	-$34,205	-$24,303
Debt Servicing:GFI	13.04%	12.38%	22.66%	23.93%	26.00%	22.46%
Debt Servicing:GFI (inclu P)	13.04%	12.38%	27.93%	23.93%	26.53%	31.62%
Profitability						
Gross Revenue	$189,825	$195,933	$208,368	$217,057	$210,888	$215,614
Gross Farm Income	$190,704	$212,951	$222,558	$227,367	$213,946	$215,594
Cash Farm Expenses	$104,576	$114,558	$117,910	$121,994	$99,323	$89,792
Cash Farm Expenses % GFI	54.84%	53.80%	52.98%	53.66%	46.42%	41.65%
Depreciation	$16,058	$25,388	$26,796	$22,162	$27,445	$22,941
Net Income	$53,252	$46,648	$27,424	$36,897	$36,367	$54,478
Return on Equity	4.85%	3.99%	2.44%	3.23%	3.30%	4.91%
Revenue Generation						
capital adjustment	$9,000	$6,000	$0	$1,122	$0	$0
EFS	$46,058	$28,617	$26,056	$45,271	$39,540	$54,956
EFS/ha	$614	$382	$347	$604	$527	$733
Return on Assets	3.49%	1.81%	1.69%	2.91%	2.60%	3.68%
Operating Profit Margin	24%	15%	13%	21%	19%	25%
NOPAT	$24,837	$15,432	$14,051	$24,412	$21,322	$29,635
Savings Behaviour						
Reinvestment Rate		150.08%	-154.86%	43.69%	-107.75%	11.45%
Capital Efficiency						
Capital turnover ratio	14.45%	13.48%	14.40%	14.60%	14.09%	14.43%
Labour efficiency						
Revenue per employee	$126,550	$130,622	$138,912	$144,705	$140,592	$143,743
Kg MS per employee	30,395	32,828	34,782	33,513	34,546	36,012
Revenue to labour ratio	20.28	13.13	13.31	15.27	19.49	19.92
Cost Composition						
Fixed cost % GFI	41%	34%	40%	31%	38%	32%
Operating Expenses (total)	76%	77%	76%	74%	71%	64%
Growth						
Cost of Debt	$13,408	$14,213	$27,193	$29,343	$29,992	$26,110
Cost of Debt (%)	6.07%	3.45%	6.47%	7.07%	7.21%	6.79%
Cost of Equity	-$17,937	$7,197	$8,831	$12,022	$19,999	$50,778
Cost of Equity (%)	-1.63%	0.62%	0.78%	1.05%	1.81%	4.58%
Cost of Capital	-$4,529	$21,410	$36,024	$41,364	$49,991	$76,888
Cost of Capital (%)	-0.34%	1.35%	2.33%	2.66%	3.29%	5.15%
Value Created	$29,366	-$5,978	-$21,973	-$16,952	-$28,669	-$47,253

Net Present Value	$248,367,740	$1,139,051	$603,020	$919,085	$647,744	$575,758
Growth rate of Equity 1		5.99%	-3.77%	1.41%	-3.55%	0.56%
PRODUCTION ANALYSIS	30-Jun-93	30-Jun-94	30-Jun-95	30-Jun-96	30-Jun-97	30-Jun-98
Total Production (kg MS)	45,593	49,242	52,173	50,269	51,819	54,018
% change		8.00%	5.95%	-3.65%	3.08%	4.24%
	150	163	200	200	200	200
Per cow production	304	302	261	251	259	270
Per hectare production	608	657	696	670	691	720
Avg price per kg MS	$3.31	$3.29	$3.37	$3.65	$3.29	$3.23
% change		-0.56%	2.44%	8.41%	-9.83%	-1.91%

Business Ratios for Case Farm Two.

	31-May-93	31-May-94	31-May-95	31-May-96	31-May-97	31-May-98
Current assets	$65,596	$16,152	$6,379	$16,534	$14,445	$23,135
Saleable shares	$0	$0	$0	$0	$0	$0
Total assets	$1,085,944	$1,052,399	$1,174,304	$1,185,212	$1,185,133	$1,244,772
Current Liabilities	$4,228	$6,716	-$4,064	$9,792	$8,789	$24,465
Total Liabilities	$385,220	$296,646	$393,095	$384,765	$368,352	$354,331
Solvency						
Debt:Assets	35%	28%	33%	32%	31%	28%
Debt:Equity (leverage)	55%	39%	50%	48%	45%	40%
Net worth (Owner's Equity)	$700,724	$755,753	$781,209	$800,447	$816,781	$890,441
Equity	65%	72%	67%	68%	69%	72%
Net Indebtedness	$319,624	$280,494	$386,716	$368,231	$353,907	$331,196
Debt Servicing						
Liquidity	15.51	2.41	-1.57	1.69	1.64	0.95
Working Capital	$61,368	$9,436	$10,443	$6,742	$5,656	-$1,330
Debt Servicing:GFI	29.22%	9.43%	16.25%	21.16%	22.07%	19.15%
Debt Servicing:GFI (inclu P)	29.22%	63.14%	16.25%	32.24%	31.61%	35.80%
Profitability						
Gross Revenue	$115,574	$151,732	$169,894	$194,009	$169,185	$177,040
Gross Farm Income	$137,010	$169,543	$177,230	$196,668	$161,563	$178,400
Cash Farm Expenses	$63,385	$82,356	$57,864	$70,405	$73,429	$75,915
Cash Farm Expenses % GFI	46.26%	48.58%	32.65%	35.80%	45.45%	42.55%
Depreciation	$5,487	$10,260	$8,289	$12,768	$11,052	$8,660
Net Income	$28,812	$61,832	$82,269	$71,910	$47,805	$67,621
Return on Equity	4.11%	8.18%	10.53%	8.98%	5.85%	7.59%
Revenue Generation						
capital adjustment	$0	$18,700	$0	$14,000	$0	$0
EFS	$43,842	$71,520	$86,077	$102,532	$58,463	$76,787
EFS/ha	$707	$1,154	$1,388	$1,590	$906	$1,190
Return on Assets	4.04%	6.80%	7.33%	8.65%	4.93%	6.17%
Operating Profit Margin	32%	42%	49%	52%	36%	43%
NOPAT	$33,631	$54,863	$66,030	$78,652	$44,847	$58,903
Savings Behaviour						
Reinvestment Rate		89.00%	30.94%	26.75%	34.17%	108.93%
Capital Efficiency						
Capital turnover ratio	12.62%	16.11%	15.09%	16.59%	13.63%	14.33%
Labour efficiency						
Revenue per employee	$109,608	$135,634	$141,784	$157,334	$129,250	$142,720
Kg MS per employee	34,396	37,430	39,464	39,145	40,120	42,832
Revenue to labour ratio	5.07	6.38	6.72	7.40	6.11	6.72

Cost Composition						
Fixed cost % GFI	45%	25%	42%	45%	43%	29%
Operating Expenses (total)	69%	69%	51%	55%	68%	61%
Growth						
Cost of Debt	$30,707	$12,264	$22,099	$31,928	$27,353	$26,209
Cost of Debt (%)	7.97%	4.13%	5.62%	8.30%	7.43%	7.40%
Cost of Equity	-$34,402	$17,465	$5,774	$20,228	$5,946	-$11,386
Cost of Equity (%)	-4.91%	2.31%	0.74%	2.53%	0.73%	-1.28%
Cost of Capital	-$3,695	$29,729	$27,872	$52,156	$33,299	$14,822
Cost of Capital (%)	-0.34%	2.82%	2.37%	4.40%	2.81%	1.19%
Value Created	$37,327	$25,134	$38,158	$26,497	$11,548	$44,081
Net Present Value	$336,311,972	$1,942,143	$2,781,952	$1,787,333	$1,596,145	$4,946,701
Growth rate of Equity		7.28%	3.26%	2.40%	2.00%	8.27%
PRODUCTION ANALYSIS	31-May-93	31-May-94	31-May-95	31-May-96	31-May-97	31-May-98
Total Production (kg MS)	42,995	46,787	49,330	48,931	50,150	53,540
% change		8.82%	5.44%	-0.81%	2.49%	6.76%
Cow numbers	140	150	158	162	165	166
Per cow production	307	312	312	302	304	323
Per hectare production	693	755	796	759	778	830
Avg price per kg MS	$3.22	$3.44	$3.23	$3.74	$3.21	$3.16
% change		6.99%	-6.15%	15.73%	-14.13%	-1.77%

Business Ratios for Case Farm Three

	31-May-93	31-May-94	31-May-95	31-May-96	31-May-97	31-May-98
Current assets	$12,202	$1,003	$17,774	$18,846	$34,463	$26,867
Saleable shares	$0	$0	$0	$0	$0	$0
Total assets	$1,274,790	$1,271,845	$1,316,796	$1,512,685	$1,518,888	$1,540,101
Current Liabilities	$39,779	$26,976	$73,009	$72,627	$67,194	$110,810
Total Liabilities	$449,579	$472,254	$502,352	$775,175	$756,933	$785,719
Solvency						
Debt:Assets	35%	37%	38%	51%	50%	51%
Debt:Equity (leverage)	54%	59%	62%	105%	99%	104%
Net worth (Owner's Equity)	$825,211	$799,591	$814,444	$737,510	$761,955	$754,382
Equity	65%	63%	62%	49%	50%	49%
Net Indebtedness	$437,377	$471,251	$484,578	$756,329	$722,470	$758,852
Debt Servicing						
Liquidity	0.31	0.04	0.24	0.26	0.51	0.24
Working Capital	-$27,577	-$25,973	-$55,235	-$53,781	-$32,731	-$83,943
Debt Servicing:GFI	16.84%	17.03%	11.76%	29.80%	29.46%	33.00%
Debt Servicing:GFI (inclu P)	18.15%	17.03%	18.73%	29.80%	34.32%	43.91%
Profitability						
Gross Revenue	$235,540	$221,025	$216,350	$221,306	$248,916	$227,745
Gross Farm Income	$238,924	$218,947	$228,628	$219,371	$248,470	$240,742
Cash Farm Expenses	$114,046	$113,960	$119,107	$130,921	$84,423	$104,500
Cash Farm Expenses % GFI	47.73%	52.05%	52.10%	59.68%	33.98%	43.41%
Depreciation	$4,641	$6,973	$7,971	$6,366	$7,962	$6,672
Net Income	$80,586	$67,505	$74,660	$17,285	$78,467	$61,871
Return on Equity	6.74%	5.32%	6.10%	-1.05%	7.02%	4.79%
Revenue Generation						
EFS	$95,823	$79,793	$76,550	$57,653	$133,356	$126,996
EFS/ha	$1,546	$1,287	$1,235	$930	$1,905	$1,587
Return on Assets	7.52%	6.27%	5.81%	3.81%	8.78%	8.25%
Operating Profit Margin	40%	36%	33%	26%	54%	53%

NOPAT	$65,918	$54,891	$52,660	$39,661	$91,738	$87,362
Savings Behaviour						
Reinvestment Rate		-37.95%	19.89%	-445.08%	31.15%	-12.24%
Capital Efficiency						
Capital turnover ratio	18.74%	17.21%	17.36%	14.50%	16.36%	15.63%
Labour efficiency						
Revenue per employee	$119,462	$110,513	$108,175	$110,653	$124,458	$113,872
Kg MS per employee	29,320	30,225	26,087	25,135	25,910	27,009
Revenue to labour ratio	5.05	4.83	4.44	4.58	7.06	5.46
Cost Composition						
Fixed cost % GFI	37%	29%	24%	43%	40%	55%
Operating Expenses (total)	60%	67%	67%	74%	47%	57%
Growth						
Cost of Debt	$27,680	$25,651	$18,498	$44,968	$54,957	$62,515
Cost of Debt (%)	6.16%	5.43%	3.68%	5.80%	7.26%	7.96%
Cost of Equity	$36,935	$46,574	$38,724	$39,059	$56,888	$21,608
Cost of Equity (%)	4.48%	5.82%	4.75%	5.30%	7.47%	2.86%
Cost of Capital	$64,614	$72,225	$57,222	$84,027	$111,845	$84,122
Cost of Capital (%)	5.07%	5.68%	4.35%	5.55%	7.36%	5.46%
Value Created	$1,304	-$17,334	-$4,562	-$44,366	-$20,107	$3,240
Net Present Value	$1,300,520	$966,595	$1,211,812	$713,987	$1,245,826	$1,599,427
Growth rate of Equity		-3.20%	1.82%	-10.43%	3.21%	-1.00%
PRODUCTION ANALYSIS	31-May-93	31-May-94	31-May-95	31-May-96	31-May-97	31-May-98
Total Production (kg MS)	58,639	60,450	59,934	56,300	66,509	68,156
% change		3.09%	-0.85%	-6.06%	18.13%	2.48%
Cow numbers	185	185	185	196	180	206
Per cow production	317	327	324	287	369	331
Per hectare production	946	975	967	908	950	852
Avg price per kg MS	$3.53	$3.34	$3.37	$3.68	$3.34	$3.17
% change		-5.34%	0.89%	9.17%	-9.34%	-5.17%

Business Ratios for Case Farm Four.

	30-Jun-93	30-Jun-94	30-Jun-95	30-Jun-96	30-Jun-97	30-Jun-98
Current assets	$24,637	$43,816	$20,166	$46,508	$28,354	$23,493
Saleable shares	$0	$0	$0	$0	$0	$0
Total assets	$1,276,584	$1,287,503	$1,310,100	$1,326,353	$1,340,973	$2,090,988
Current Liabilities	$25,076	$23,801	$66,298	$61,481	$97,947	$74,693
Total Liabilities	$174,179	$139,361	$239,628	$222,758	$246,407	$1,032,193
Solvency						
Debt:Assets	14%	11%	18%	17%	18%	49%
Debt:Equity (leverage)	16%	12%	22%	20%	23%	97%
Net worth (Owner's Equity)	$1,102,405	$1,148,142	$1,070,472	$1,103,595	$1,094,566	$1,058,795
Equity	86%	89%	82%	83%	82%	51%
Net Indebtedness	$149,542	$95,545	$219,462	$176,250	$218,053	$1,008,700
Debt Servicing						
Liquidity	0.98	1.84	0.30	0.76	0.29	0.31
Working Capital	-$439	$20,015	-$46,132	-$14,973	-$69,593	-$51,200
Debt Servicing:GFI	6.27%	17.95%	21.18%	13.70%	16.84%	23.14%
Debt Servicing:GFI (inclu P)	10.63%	19.15%	21.18%	17.74%	21.33%	23.14%
Profitability						
Gross Revenue	$254,167	$253,634	$281,551	$308,278	$261,395	$250,037
Gross Farm Income	$243,911	$293,767	$256,705	$298,653	$285,577	$317,443
CashFarm Expenses	$159,067	$147,374	$157,454	$166,970	$174,549	$208,736

Cash Farm Expenses % GFI	65%	50%	61%	56%	61%	66%
Depreciation	$11,988	$11,164	$10,963	$10,661	$10,552	$25,996
Net Income	$70,021	$85,050	$33,921	$81,828	$72,378	$9,456
Return on Equity	6.35%	7.41%	3.17%	7.41%	6.61%	0.89%
Revenue Generation						
capital adjustment	$0	$0	$0	$5,000	$8,000	$16,000
EFS	$59,076	$107,781	$58,288	$97,744	$98,470	$56,412
EFS/ha	$788	$1,437	$777	$1,303	$1,313	$752
Return on Assets	4.63%	8.37%	4.45%	7.37%	7.34%	2.70%
Operating Profit Margin	24%	37%	23%	33%	34%	18%
NOPAT	$38,328	$69,927	$37,817	$63,415	$63,887	$36,600
Savings Behaviour						
Reinvestment Rate		54%	-229%	40%	-12%	-378%
Capital Efficiency						
Capital turnover ratio	19.11%	22.82%	19.59%	22.52%	21.30%	15.18%
Labour efficiency						
Revenue per employee	$105,903	$105,681	$117,313	$90,670	$76,881	$73,540
Kg MS per employee	20,582	27,106	26,532	21,661	20,788	23,496
Revenue to labour ratio	5.42	4.62	5.32	5.00	4.26	2.95
Cost Composition						
Fixed cost % GFI	23%	17%	35%	17%	26%	38%
Operating Expenses (total)	81%	64%	77%	68%	73%	82%
Growth						
Cost of Debt	$9,930	$34,211	$35,273	$26,546	$31,202	$47,658
Cost of Debt (%)	5.70%	24.55%	14.72%	11.92%	12.66%	4.62%
Cost of Equity	$324	$57,890	$23,790	$71,834	$12,822	$14,149
Cost of Equity (%)	0.03%	5.04%	2.22%	6.51%	1.17%	1.34%
Cost of Capital	$10,254	$92,102	$59,063	$98,380	$44,024	$61,807
Cost of Capital (%)	0.80%	7.15%	4.51%	7.42%	3.28%	2.96%
Value Created	$28,074	-$22,174	-$21,246	-$34,965	$19,863	-$25,207
Net Present Value	$4,771,705	$977,526	$838,827	$854,962	$1,945,989	$1,238,200
Growth rate of Equity		3.98%	-7.26%	3.00%	-0.82%	-3.38%
PRODUCTION ANALYSIS	30-Jun-93	30-Jun-94	30-Jun-95	30-Jun-96	30-Jun-97	30-Jun-98
Total Production (kg MS)	49,397	65,055	63,676	73,647	70,678	79,887
% change		31.70%	-2.12%	15.66%	-4.03%	13.03%
Peak Cows	210	240	240	240	240	340
Per cow production	235	271	265	307	294	235
Per hectare production	475	626	612	708	680	563
Avg price per kg MS	$3.68	$3.30	$3.39	$3.59	$3.43	$3.20
% change		-10.30%	2.74%	5.91%	-4.45%	-6.75%

Business Ratios for Case Farm Five.

	31-Aug-93	31-Aug-94	31-Aug-95	31-May-96	31-May-97	31-May-98
Current assets	$238,274	$277,230	$248,100	$268,910	$280,189	$340,274
Saleable shares	$0	$0	$0	$0	$0	$0
Total assets	$1,657,339	$1,701,275	$1,679,718	$1,729,271	$1,782,071	$1,860,154
Current Liabilities	$49,272	$58,149	$91,064	$142,099	$143,180	$118,333
Total Liabilities	$738,050	$707,695	$715,539	$746,673	$639,815	$628,751
Solvency						
Debt:Assets	45%	42%	43%	43%	36%	34%
Debt:Equity (leverage)	80.28%	71.23%	74.21%	75.99%	56.01%	51.06%
Net worth (Owner's Equity)	$919,289	$993,580	$964,179	$982,598	$1,142,256	$1,231,403
Equity	55%	58%	57%	57%	64%	66%

Net Indebtedness	$499,776	$430,465	$467,439	$477,763	$359,626	$288,477
Debt Servicing						
Liquidity	4.84	4.77	2.72	1.89	1.96	2.88
Working Capital	$189,002	$219,081	$157,036	$126,811	$137,009	$221,941
Debt Servicing:GFI	27.09%	21.61%	20.74%	30.58%	20.42%	17.61%
Debt Servicing:GFI (inclu P)	27.09%	65.27%	26.31%	35.75%	44.03%	17.61%
Profitability						
Gross Revenue	$427,815	$395,948	$438,258	$390,501	$454,946	$465,868
Gross Farm Income	$438,072	$407,642	$450,184	$385,114	$457,049	$483,340
CashFarm Expenses	$214,028	$213,440	$189,415	$210,318	$164,468	$224,118
Cash Farm Expenses % GFI	48.86%	52.36%	42.08%	54.61%	35.98%	46.37%
Depreciation	$18,722	$15,753	$17,577	$16,414	$31,732	$27,909
Net Income	$88,540	$111,459	$149,839	$53,311	$184,156	$165,935
Return on Equity	6.64%	8.07%	11.78%	1.74%	12.74%	10.13%
Revenue Generation						
EFS	$179,701	$168,319	$206,942	$134,831	$238,852	$209,792
EFS/ha	$1,745	$1,634	$1,556	$1,014	$1,796	$1,577
Return on Assets	10.84%	9.89%	12.32%	7.80%	13.40%	11.28%
Operating Profit Margin	42%	43%	47%	35%	53%	45%
NOPAT	$123,442	$115,623	$142,154	$92,619	$164,074	$144,112
Savings Behaviour						
Reinvestment Rate		67%	-20%	35%	87%	54%
Capital Efficiency						
Capital turnover ratio	26%	24%	27%	22%	26%	26%
Labour efficiency						
Revenue per employee	$213,908	$197,974	$219,129	$195,251	$227,473	$232,934
Kg MS per employee	35,735	41,190	26,087	25,135	25,910	27,009
Revenue to labour ratio	11.61	8.57	8.44	7.74	9.20	5.85
Cost Composition						
Fixed cost % GFI	99%	41%	78%	62%	89%	76%
Operating Expenses (total)	59%	64%	54%	68%	51%	61%
Growth						
Cost of Debt	$81,512	$60,525	$64,127	$80,899	$64,105	$58,462
Cost of Debt (%)	11.04%	8.55%	8.96%	10.83%	10.02%	9.30%
Cost of Equity	$65,078	$142,394	$58,801	$36,104	$183,756	$95,619
Cost of Equity (%)	7.08%	14.33%	6.10%	3.67%	16.09%	7.77%
Cost of Capital	$146,590	$202,919	$122,928	$117,003	$247,861	$154,082
Cost of Capital (%)	8.84%	11.93%	7.32%	6.77%	13.91%	8.28%
Value Created	-$23,148	-$87,296	$19,227	-$24,384	-$83,787	-$9,970
Net Present Value	$1,395,624	$969,386	$1,942,435	$1,368,881	$1,179,659	$1,739,795
Growth rate of Equity Capital		7.48%	-3.05%	1.87%	13.98%	7.24%
PRODUCTION ANALYSIS	31-Aug-93	31-Aug-94	31-Aug-95	31-May-96	31-May-97	31-May-98
Total Production (kg MS)	71,470	82,380	96,900	95,800	105,150	105,426
% change		15.27%	17.63%	-1.14%	9.76%	0.26%
Cow Numbers	220	250	290	290	309	330
Per cow production	325	330	334	330	340	319
Per hectare production	694	800	729	720	791	793
Avg price per kg MS	$4.72	$4.03	$3.84	$3.38	$3.86	$3.99
% change		-14.53%	-4.77%	-11.86%	14.10%	3.40%

Business Ratios for Case Farm Six.

	30-Jun-93	30-Jun-94	30-Jun-95	30-Jun-96	30-Jun-97	30-Jun-98
Current assets	$247,884	$200,529	$246,310	$298,367	$383,153	$124,887
Saleable shares	$0	$0	$0	$0	$0	$0
Total assets	$2,372,463	$2,412,099	$2,710,279	$2,768,465	$2,845,971	$2,679,024
Current Liabilities	$150,410	$237,410	$243,019	$291,411	$332,252	$88,157
Total Liabilities	$354,698	$610,525	$607,677	$635,112	$663,546	$405,913
Solvency						
Debt:Assets	15%	25%	22%	23%	23%	15%
Debt:Equity (leverage)	17.58%	33.89%	28.90%	29.77%	30.40%	17.86%
Net worth (Owner's Equity)	$2,017,765	$1,801,574	$2,102,602	$2,133,353	$2,182,425	$2,273,111
Equity	85%	75%	78%	77%	77%	85%
Net Indebtedness	$106,814	$409,996	$361,367	$336,745	$280,393	$281,026
Debt Servicing						
Liquidity	1.65	0.84	1.01	1.02	1.15	1.42
Working Capital	$97,474	-$36,881	$3,291	$6,956	$50,901	$36,730
Debt Servicing:GFI	6.32%	7.20%	13.43%	12.07%	8.00%	9.52%
Debt Servicing:GFI (inclu P)	10.07%	7.20%	16.07%	17.94%	11.44%	13.87%
Profitability						
Gross Revenue	$333,887	$279,360	$331,224	$347,754	$357,187	$305,737
Gross Farm Income	$314,407	$313,541	$320,870	$356,973	$360,215	$311,651
Cash Farm Expenses	$150,972	$156,595	$175,182	$170,326	$154,955	$152,838
Cash Farm Expenses % GFI	48.02%	49.94%	54.60%	47.71%	43.02%	49.04%
Depreciation	$9,526	-$209	$18,379	$15,786	$16,096	$13,981
Net Income	$153,799	$127,739	$84,202	$127,895	$151,329	$117,527
Return on Equity	6.38%	5.70%	2.82%	4.82%	5.79%	4.07%
Revenue Generation						
EFS	$148,671	$125,322	$102,309	$145,982	$155,131	$122,200
EFS/ha	$1,982	$1,671	$1,364	$1,946	$2,068	$1,629
Return on Assets	6.27%	5.20%	3.77%	5.27%	5.45%	4.56%
Operating Profit Margin	45%	45%	31%	42%	43%	40%
NOPAT	$105,627	$76,825	$101,470	$118,691	$118,961	$62,436
Savings Behaviour						
Reinvestment Rate		-169.24%	357.51%	24.04%	32.43%	77.16%
Capital Efficiency						
Capital turnover ratio	14.07%	11.58%	12.22%	12.56%	12.55%	11.41%
Labour efficiency						
Revenue per employee	$166,944	$139,680	$165,612	$173,877	$178,594	$152,869
Kg MS per employee	22,654	25,429	25,429	29,494	30,590	32,500
Revenue to labour ratio	5.93	4.96	5.45	5.60	5.45	8.53
Cost Composition						
Fixed cost %	27%	26%	21%	26%	26%	36%
Operating Expenses (total)	59%	58%	68%	59%	54%	62%
Growth						
Cost of Debt	$14,119	$16,045	$30,627	$30,612	$20,463	$21,082
Cost of Debt (%)	3.98%	2.63%	5.04%	4.82%	3.08%	5.19%
Cost of Equity	$48,530	$9,341	$115,031	$76,163	$121,630	$39,500
Cost of Equity (%)	2.41%	0.52%	5.47%	3.57%	5.57%	1.74%
Cost of Capital	$62,649	$25,386	$145,658	$106,775	$142,093	$60,582
Cost of Capital (%)	2.64%	1.05%	5.37%	3.86%	4.99%	2.26%
Value Created	$42,979	$51,439	-$44,188	$11,916	-$23,132	$1,854
Net Present Value	$4,000,033	$7,299,737	$1,888,072	$3,077,412	$2,382,658	$2,761,008
Growth rate of Equity		-12.00%	14.32%	1.44%	2.25%	3.99%
PRODUCTION ANALYSIS	30-Jun-93	30-Jun-94	30-Jun-95	30-Jun-96	30-Jun-97	30-Jun-98
Total Production (kg MS)	45,308	50,858	50,858	58,988	61,180	65,000
% change		12.25%	0.00%	15.99%	3.72%	6.24%
cow numbers	140	157	157	168	178	171
Per cow production	324	324	324	351	344	380
Per hectare production	871	942	848	983	1,020	1,083
Avg price per kg MS	$4.77	$3.97	$4.38	$4.21	$3.94	$3.70
% change		-16.71%	10.30%	-3.88%	-6.39%	-6.09%

Business Ratios for Case Farm Seven.

	31-Mar-93	31-Mar-94	31-Mar-95	31-Mar-96	31-Mar-97	31-Mar-98
Current assets	$33,099	$37,128	$63,345	$52,249	$46,949	$42,865
Saleable shares	$0	$0	$0	$0	$0	$0
Total assets	$2,953,091	$3,069,288	$3,043,408	$3,155,351	$3,158,826	$3,027,590
Current Liabilities	$517,026	$188,104	$130,541	$226,893	$122,897	$72,689
Total Liabilities	$532,406	$571,488	$714,060	$989,299	$1,026,754	$958,763
Solvency						
Debt:Assets	18%	19%	23%	31%	33%	32%
Debt:Equity (gearing or leverage)	21.99%	22.88%	30.65%	45.67%	48.16%	46.34%
Net worth	$2,420,685	$2,497,800	$2,329,348	$2,166,052	$2,132,072	$2,068,827
Equity	82%	81%	77%	69%	67%	68%
Net Indebtedness	$499,307	$534,360	$650,715	$937,050	$979,805	$915,898
Debt Servicing						
Liquidity	0.06	0.20	0.49	0.23	0.38	0.59
Working Capital	-$483,927	-$150,976	-$67,196	-$174,644	-$75,948	-$29,824
Debt Servicing:GFI	8.43%	8.81%	10.07%	14.65%	19.06%	16.58%
Debt Servicing:GFI (inclu P)	8.43%	13.51%	10.07%	14.65%	19.06%	18.77%
Profitability						
Gross Revenue	$669,353	$675,717	$732,798	$710,055	$717,254	$809,051
Gross Farm Income	$682,850	$733,834	$709,150	$729,864	$747,129	$809,887
Cash Farm Expenses	$368,569	$364,015	$412,903	$486,080	$438,977	$421,818
Cash Farm Expenses % GFI	54%	50%	58%	67%	59%	52%
Depreciation	$57,577	$49,847	$48,819	$56,142	$62,843	$55,044
Net Income	$200,503	$257,727	$176,965	$82,212	$110,972	$200,331
Return on Equity	7.39%	9.45%	6.46%	2.53%	3.86%	8.16%
Revenue Generation						
capital adjustments			20000	60000	13000	
EFS	$294,090	$350,685	$290,625	$277,762	$300,442	$358,057
EFS/ha	$3,268	$3,896	$2,325	$2,415	$2,404	$2,652
Return on Assets	9.96%	11.43%	9.55%	8.80%	9.51%	11.83%
Operating Profit Margin	43%	48%	41%	38%	40%	44%
NOPAT	$199,991	$238,478	$197,635	$188,888	$204,311	$243,491
Savings Behaviour						
Reinvestment Rate		29.92%	-95.19%	-198.63%	-30.62%	-31.57%
Capital Efficiency						
Capital turnover ratio	23.12%	23.91%	23.30%	23.13%	23.65%	26.75%
Labour efficiency						
Revenue per employee	$191,244	$193,062	$209,371	$202,873	$204,930	$231,157
Kg MS per employee	34,400	38,814	47,077	45,907	51,230	55,008
Revenue to labour ratio	6.87	7.08	6.26	4.84	4.85	5.47
Cost Composition						
Fixed cost % GFI	27%	25%	25%	25%	20%	21%
Operating Expenses (total)	57%	53%	62%	70%	63%	56%
Growth						
Cost of Debt	$30,801	$49,732	$57,786	$82,579	$106,791	$84,228
Cost of Debt (%)	5.79%	8.70%	8.09%	8.35%	10.40%	8.79%
Cost of Equity	$84,731	$106,637	$149,684	$157,942	$123,622	$208,070
Cost of Equity (%)	3.50%	4.27%	6.43%	7.29%	5.80%	10.06%
Cost of Capital	$115,532	$156,369	$207,470	$240,521	$230,413	$292,298
Cost of Capital (%)	3.91%	5.09%	6.82%	7.62%	7.29%	9.65%
Value Created	$84,459	$82,109	-$9,835	-$51,634	-$26,101	-$48,807
Net Present Value	$5,111,922	$4,680,960	$2,899,143	$2,477,980	$2,800,991	$2,522,052
Growth rate of Equity Capital		3.09%	-7.23%	-7.54%	-1.59%	-3.06%
PRODUCTION ANALYSIS	31-Mar-93	31-Mar-94	31-Mar-95	31-Mar-96	31-Mar-97	31-Mar-98
Total Production (kg MS)	120,400	135,850	164,770	160,676	179,305	192,528

% change		12.83%	21.29%	-2.48%	11.59%	7.37%
cow numbers	345	345	425	440	460	505
Per cow production	349	394	388	365	390	381
Per hectare production	1,338	1,509	1,318	1,397	1,434	1,426
Avg price per kg MS	$4.80	$4.14	$3.80	$4.13	$3.74	$3.78
% change		-13.78%	-8.21%	8.76%	-9.38%	0.87%

Business Ratios for Case Farm Eight.

	31-Mar-93	31-Mar-94	31-Mar-95	31-Mar-96	31-Mar-97	31-Mar-98
Current assets	$24,496	$16,106	$18,115	$31,249	$29,440	$29,394
Saleable shares	$0	$0	$0	$0	$0	$0
Total assets	$1,551,307	$1,556,570	$1,562,439	$2,016,789	$2,030,699	$2,052,368
Current Liabilities	$51,696	$92,597	$75,936	$78,857	$35,696	$66,904
Total Liabilities	$430,455	$551,694	$495,257	$818,891	$743,553	$739,950
Solvency						
Debt:Assets	28%	35%	32%	41%	37%	36%
Debt:Equity (gearing or leverage)	38.40%	54.90%	46.41%	68.36%	57.77%	56.38%
Net worth (Owner's Equity)	$1,120,852	$1,004,876	$1,067,182	$1,197,898	$1,287,146	$1,312,418
Equity	72%	65%	68%	59%	63%	64%
Net Indebtedness	$405,959	$535,588	$477,142	$787,642	$714,113	$710,556
Debt Servicing						
Liquidity	0.47	0.17	0.24	0.40	0.82	0.44
Working Capital	-$27,200	-$76,491	-$57,821	-$47,608	-$6,256	-$37,510
Debt Servicing:GFI	10.04%	11.62%	11.85%	11.20%	16.65%	14.22%
Debt Servicing:GFI (inclu P)	21.99%	11.62%	21.53%	11.20%	24.03%	22.02%
Profitability						
Gross Revenue	$412,166	$358,558	$402,887	$407,059	$410,823	$431,778
Gross Farm Income	$414,784	$367,366	$411,260	$414,224	$436,043	$446,257
Cash Farm Expenses	$178,129	$173,224	$209,279	$218,992	$238,735	$237,545
Cash Farm Expenses % GFI	43%	47%	51%	53%	55%	53%
Depreciation	$18,554	$19,000	$16,553	$19,967	$29,565	$30,760
Net Income	$194,827	$132,460	$136,680	$131,074	$139,763	$115,502
Return on Equity	14.04%	9.35%	9.16%	7.77%	7.31%	5.18%
Revenue Generation						
EFS	$198,968	$136,642	$146,553	$139,471	$166,737	$131,452
EFS/ha	$1,531	$1,051	$1,127	$1,073	$1,029	$811
Return on Assets	12.83%	8.78%	9.38%	6.92%	8.21%	6.40%
Operating Profit Margin	48%	37%	36%	34%	38%	29%
NOPAT	$129,993	$89,273	$95,749	$91,122	$108,936	$85,883
Savings Behaviour						
Reinvestment Rate		-87.56%	45.59%	99.73%	63.86%	21.88%
Capital Efficiency						
Capital turnover ratio	26.74%	23.60%	26.32%	20.54%	21.47%	21.74%
Labour efficiency						
Revenue per employee	$206,083	$179,279	$201,444	$162,824	$164,329	$172,711
Kg MS per employee	48,740	47,705	52,821	49,243	47,928	48,946
Revenue to labour ratio	6.47	5.57	5.90	6.05	4.52	4.84
Cost Composition						
Fixed cost % GFI	38%	39%	25%	28%	34%	28%
Operating Expenses (total)	56%	63%	64%	67%	72%	71%
Growth						
Cost of Debt	$27,206	$27,886	$31,849	$30,313	$47,432	$41,454
Cost of Debt (%)	6.32%	5.05%	6.43%	3.70%	6.38%	5.60%

Cost of Equity	$34,859	$47,922	$78,004	$34,692	$66,312	$36,238
Cost of Equity (%)	3.11%	4.77%	7.31%	2.90%	5.15%	2.76%
Cost of Capital	$62,064	$75,807	$109,852	$65,005	$113,744	$77,693
Cost of Capital (%)	4.00%	4.87%	7.03%	3.22%	5.60%	3.79%
Value Created	$67,929	$13,466	-$14,104	$26,117	-$4,809	$8,190
Net Present Value	$3,249,195	$1,833,069	$1,361,839	$2,827,059	$1,944,850	$2,268,714
Growth rate of Equity		-11.54%	5.84%	10.91%	6.93%	1.93%
PRODUCTION ANALYSIS	31-Mar-93	31-Mar-94	31-Mar-95	31-Mar-96	31-Mar-97	31-Mar-98
Total Production (kg MS)	97,479	95,409	105,641	98,485	119,821	122,364
% change		-2.12%	10.72%	-6.77%	21.66%	2.12%
cow numbers	300	308	311	304	365	380
Per cow production	325	310	340	324	328	322
Per hectare production	750	734	813	758	740	755
Avg price per kg MS	$3.58	$3.35	$3.42	$3.72	$3.29	$3.29
% change		-6.54%	2.16%	8.66%	-11.39%	0.03%

Business Ratios for Case Farm Nine.

	31-May-93	31-May-94	31-May-95	31-May-96	31-May-97	31-May-98
Current assets	$15,219	$12,336	$13,810	$11,365	$19,898	$18,877
Saleable shares	$0	$0	$0	$0	$0	$0
Total assets	$768,931	$788,821	$792,015	$780,387	$782,039	$832,444
Current Liabilities	$16,429	$16,865	$59,083	$79,234	$29,403	$33,883
Total Liabilities	$273,443	$293,909	$285,533	$282,234	$272,403	$255,240
Solvency						
Debt:Assets	36%	37%	36%	36%	35%	31%
Debt:Equity (leverage)	55.19%	59.39%	56.38%	56.66%	53.45%	44.22%
Net worth (Owner's Equity)	$495,488	$494,912	$506,482	$498,153	$509,636	$577,204
Equity	64%	63%	64%	64%	65%	69%
Net Indebtedness	$258,224	$281,573	$271,723	$270,869	$252,505	$236,363
Debt Servicing						
Liquidity	0.93	0.73	0.23	0.14	0.68	0.56
Working Capital	-$1,210	-$4,529	-$45,273	-$67,869	-$9,505	-$15,006
Debt Servicing:GFI	14.11%	14.93%	15.29%	18.04%	15.19%	14.94%
Debt Servicing:GFI (inclu P)	14.11%	14.93%	42.73%	29.30%	15.19%	25.80%
Profitability						
Gross Revenue	$170,941	$167,423	$182,307	$179,696	$179,087	$195,505
Gross Farm Income	$168,838	$169,144	$184,332	$177,675	$177,746	$199,156
Cash Farm Expenses	$59,876	$56,365	$64,334	$83,423	$87,581	$94,959
Cash Farm Expenses % GFI	35%	33%	35%	47%	49%	48%
Depreciation	$6,102	$8,327	$12,918	$12,079	$9,737	$9,081
Net Income	$87,255	$79,196	$78,903	$50,117	$54,994	$65,372
Return on Equity	12.56%	10.95%	10.64%	5.04%	5.89%	6.99%
Revenue Generation						
EFS	$86,074	$79,452	$82,080	$57,173	$56,992	$70,116
EFS/ha	$1,871	$1,727	$1,784	$1,243	$1,239	$1,524
Return on Assets	11.19%	10.07%	10.36%	7.33%	7.29%	8.42%
Operating Profit Margin	51%	47%	45%	32%	32%	35%
NOPAT	$61,898	$57,136	$59,026	$41,115	$40,984	$50,422
Savings Behaviour						
Reinvestment Rate		-0.73%	14.66%	-16.62%	20.88%	103.36%
Capital Efficiency						
Capital turnover ratio	21.96%	21.44%	23.27%	22.77%	22.73%	23.92%

Labour efficiency						
Revenue per employee	$113,961	$111,615	$121,538	$119,797	$119,391	$130,337
Kg MS per employee	26,778	26,817	30,465	29,151	32,125	35,363
Revenue to labour ratio	6.72	6.20	6.56	6.13	6.06	6.66
Cost Composition						
Fixed cost % GFI	37%	38%	35%	41%	28%	28%
Operating Expenses (total)	54%	53%	55%	68%	69%	65%
Growth						
Cost of Debt	$17,129	$18,162	$20,263	$23,052	$19,415	$21,390
Cost of Debt (%)	6.26%	6.18%	7.10%	8.17%	7.13%	8.38%
Cost of Equity	$28,719	$29,762	$34,753	$18,239	$30,038	$38,571
Cost of Equity (%)	5.80%	6.01%	6.86%	3.66%	5.89%	6.68%
Cost of Capital	$45,848	$47,924	$55,016	$41,291	$49,453	$59,961
Cost of Capital (%)	5.96%	6.08%	6.95%	5.29%	6.32%	7.20%
Value Created	$16,050	$9,212	$4,010	-$177	-$8,468	-$9,538
Net Present Value	$1,038,117	$940,446	$849,746	$777,050	$648,121	$700,022
Growth rate of Equity		-0.12%	2.28%	-1.67%	2.25%	11.71%
PRODUCTION ANALYSIS	31-May-93	31-May-94	31-May-95	31-May-96	31-May-97	31-May-98
Total Production (kg MS)	40,167	40,226	45,697	43,726	48,188	53,044
% change		0.15%	11.97%	-4.51%	9.26%	9.15%
cow numbers	118	111	122	123	120	125
Per cow production	340	362	375	355	402	424
Per hectare production	873	874	993	951	1,048	1,153
Avg price per kg MS	$3.55	$3.41	$3.33	$3.66	$3.39	$3.30
% change		-4.18%	-2.40%	9.02%	-8.02%	-2.86%

Business Ratios for Case Farm Ten.

	31-May-93	31-May-94	31-May-95	31-May-96	31-May-97	31-May-98
Current assets	$24,570	$29,947	$48,530	$86,264	$69,855	$47,649
Saleable shares	$0	$0	$0	$0	$0	$0
Total assets	$413,322	$439,660	$455,577	$521,157	$681,424	$814,436
Current Liabilities	$24,035	$15,932	$16,456	$41,602	$29,143	$33,775
Total Liabilities	$99,676	$88,427	$86,000	$112,390	$284,642	$261,297
Solvency						
Debt:Assets	24%	20%	19%	22%	42%	32%
Debt:Equity (leverage)	32%	25%	23%	27%	72%	47%
Net worth (Owner's Equity)	$313,647	$351,232	$369,577	$408,767	$396,782	$553,139
Equity	76%	80%	81%	78%	58%	68%
Net Indebtedness	$75,106	$58,480	$37,470	$26,126	$214,787	$213,648
Debt Servicing						
Liquidity	1.02	1.88	2.95	2.07	2.40	1.41
Working Capital	$534	$14,015	$32,074	$44,662	$40,712	$13,874
Debt Servicing:GFI	24.47%	20.91%	25.05%	25.73%	26.62%	24.26%
Debt Servicing:GFI (inclu P)	24.47%	20.91%	25.05%	34.44%	26.62%	33.49%
Profitability						
Gross Revenue	$230,319	$246,855	$235,388	$268,457	$335,738	$230,554
Gross Farm Income	$233,952	$277,290	$238,808	$291,351	$311,753	$297,472
Cash Farm Expenses	$99,219	$119,600	$127,621	$128,424	$175,465	$124,174
Cash Farm Expenses % GFI	42%	43%	53%	44%	56%	42%
Depreciation	$6,065	$10,981	$9,606	$8,912	$10,093	$6,726
Net Income	$90,421	$106,170	$47,755	$88,593	$57,119	$98,406
Return on Equity	20.46%	22.04%	4.74%	14.43%	6.99%	12.50%

Revenue Generation						
EFS	$121,415	$135,392	$77,339	$133,930	$110,728	$141,311
EFS/ha	$1,518	$1,692	$967	$1,674	$1,384	$1,766
Return on Assets	29.38%	30.79%	16.98%	25.70%	16.25%	17.35%
Operating Profit Margin	52%	49%	32%	46%	36%	48%
NOPAT	$90,664	$116,112	$47,557	$136,380	$73,788	$136,337
Savings Behaviour						
Reinvestment Rate		35.40%	38.41%	44.24%	-20.98%	158.89%
Capital Efficiency						
Capital turnover ratio	56.60%	63.07%	52.42%	55.90%	45.75%	36.52%
Labour efficiency						
Revenue per employee	$115,159	$123,428	$117,694	$134,228	$167,869	$115,277
Kg MS per employee	31,699	31,221	34,896	35,147	44,143	40,200
Revenue to labour ratio	6.46	6.30	5.44	6.22	7.00	4.91
Cost Composition						
Fixed cost % GFI	44%	33%	44%	30%	44%	32%
Operating Expenses (total)	56%	57%	70%	57%	69%	54%
Growth						
Cost of Debt	$42,746	$43,289	$44,679	$55,977	$61,967	$53,880
Cost of Debt (%)	42.89%	48.95%	51.95%	49.81%	21.77%	20.62%
Cost of Equity	-$9,881	$839	$18,673	$5,190	-$9,769	$7,087
Cost of Equity (%)	-3.15%	0.24%	5.05%	1.27%	-2.46%	1.28%
Cost of Capital	$32,865	$44,128	$63,353	$61,167	$52,198	$60,967
Cost of Capital (%)	7.95%	10.04%	13.91%	11.74%	7.66%	7.49%
Value Created	$57,799	$71,984	-$15,796	$75,213	$21,590	$75,370
Net Present Value	$1,140,229	$1,156,860	$341,986	$1,161,986	$963,282	$1,821,273
Growth rate of Equity		10.70%	4.96%	9.59%	-3.02%	28.27%
PRODUCTION ANALYSIS	31-May-93	31-May-94	31-May-95	31-May-96	31-May-97	31-May-98
Total Production (kg MS)	63,397	62,442	69,791	70,294	88,286	80,400
% change		-1.51%	11.77%	0.72%	25.60%	-8.93%
cow numbers	210	230	242	237	235	234
Per cow production	302	271	288	297	376	344
Per hectare production	792	781	872	879	1,104	1,005
Avg price per kg MS	$3.34	$3.66	$3.04	$3.65	$3.42	$3.31
% change		9.84%	-17.14%	20.17%	-6.17%	-3.42%